# UNIVERSIDAD AUTÓNOMA DE MADRID

**FACULTY OF ECONOMICS AND BUSINESS**

**Department of Business Organization**


"EL DESARROLLO SOSTENIBLE EN LOS CAMPUS DE LAS UNIVERSIDADES ESPAÑOLAS DESDE UNA PERSPECTIVA DE LOS *STAKEHOLDERS*"

"SUSTAINABLE DEVELOPMENT ON SPANISH UNIVERSITY CAMPUSES FROM A STAKEHOLDER APPROACH"

DOCTORAL THESIS

Submitted in accordance with the requirements for the degree of

International PhD in Economics and Business

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# "EL DESARROLLO SOSTENIBLE EN LOS CAMPUS DE LAS UNIVERSIDADES ESPAÑOLAS DESDE UNA PERSPECTIVA DE LOS *STAKEHOLDERS*"

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Tesis presentada para optar al Grado de Doctor con Mención Internacional en la Universidad Autónoma de Madrid

Programa Oficial de Posgrado en Economía de la Empresa
Departamento de Organización de Empresas
Universidad Autónoma de Madrid
2019

*This thesis is dedicated to my family and husband; to my family for believing in me, and to my husband for being my inspiration and thoughtful advocate throughout this dream, as well as my greatest support every day. Thank you for standing beside me.*

## AGRADECIMIENTOS / ACKNOWLEDGEMENTS

El siguiente apartado de esta tesis doctoral expresa mi más profundo agradecimiento a todas las personas e instituciones que han contribuido al desarrollo y conclusión de esta investigación. En primer lugar, a mis directores de tesis, el Profesor Doctor D. Jesús Rodríguez Pomeda y el Profesor Doctor D. Fernando Casani: gracias por vuestro apoyo incondicional y generosidad al compartir vuestra experiencia y conocimiento científico. Vuestro aliento y guía han sido fundamentales para llegar a cumplir este sueño. Gracias Dr. Jesús Rodríguez Pomeda por haber creído en mí desde el primer día, gracias por haberme motivado a presentarme a la Beca FPI de la UAM, que ha sido para mí un apoyo extraordinario. De igual forma, estaré enormemente agradecida con el Dr. Fernando Casani por su disposición y orientación en la consecución de esta trayectoria académica y científica, gracias por el apoyo en las diferentes etapas del desarrollo empírico de esta tesis. Por todas vuestras sugerencias, comentarios, discusión crítica, perfeccionismo y, sobre todo, por vuestra calidad humana e interés en mi crecimiento profesional y personal. Gracias también a la Profesora Dra. Angélica Sandoval, con quien he compartido desde el día cero de mi tesis este proyecto nacional, del que han surgido un sinnúmero de colaboraciones, gracias por transmitirme esa constancia en conseguir lo “inalcanzable”, gracias por tu amistad y por tus consejos de vida.

Sin duda alguna, el finalizar esta etapa doctoral como becaria FPI-UAM no hubiera sido posible sin el apoyo del Instituto Interuniversitario de Investigación Avanzada sobre Evaluación de la Ciencia y la Universidad (INAECU), en particular a su director, el Dr. Elías Sanz, investigador principal del proyecto nacional "La investigación en eficiencia energética y transporte sostenible en el medio urbano: análisis del desarrollo científico y la percepción social del tema desde la perspectiva de los estudios métricos de información" CSO2014-51916-C2-1-R,

Programa Estatal de Investigación, Desarrollo e Innovación Orientada a los Retos de la Sociedad, del Ministerio de Economía y Competitividad.(2015-2018)". A todos los miembros de este instituto, por la grata acogida y colaboración en el mencionado proyecto. Asimismo, a la Profesora Dra. Flor Sánchez, Sub Directora de INAECU, y Coordinadora del grupo de investigación Universidad y Sociedad (SOCIUN), con quien hemos compartido este proyecto. Gracias por transmitirme tus conocimientos y, desde luego, el espíritu de trabajo en equipo.

También deseo reflejar el apoyo y acogida recibido de los profesores del Departamento de Organización de Empresas, especialmente de la Profesora, Dra. Adriana Pérez Encinas, por su generosidad, apoyo, ánimo, consejos, y su amistad. La Profesora, Dra. María Soledad Celemin Pedroche, gracias por intercambiar experiencias, palabras de aliento, y por la extraordinaria acogida en el departamento. De igual manera, agradezco al Dr. Juan Ignacio Martín Castilla y a la Dra. Cristina Esteban, docentes del área de Dirección Estratégica, quienes me apoyaron con su experiencia en mi labor como docente en esta área. A Dña. María Mercedes Pérez Huerta, Secretaria Administrativa del Departamento, gracias por su trato atento, buen humor, y sus vibras optimistas que contagia a quienes la conocemos. Estaré profundamente agradecida y orgullosa de haber compartido cuatro años con excelentes colegas del departamento.

Quiero además expresar mi agradecimiento durante mis estancias de investigación internacional, primero al Profesor, Dr. Jürgen Schmude, del Departamento de Geografía Económica y Turismo de la Ludwig-Maximilians-University Munich, en Múnich, Alemania; quien me brindo una experiencia multidisciplinaria; al Profesor, Dr. Gordon Winder experto en geografía económica y sostenibilidad, gracias por generar una discusión del tema de investigación y su planteamiento, por las oportunidades de expandir mi red de colegas investigadores mediante la presentación en el Rachel Carson Center for Environment and Society

(RCC), centro de investigación que me acogió en mi segunda etapa de estancia internacional, en Múnich, Alemania. Gracias a su Director, Prof. Dr. Christof Mauch, y a su equipo Dña. Lena Engel, entre otros, quienes desde un inicio no dudaron en abrirme las puertas de su prestigioso Centro de Investigación, siendo así unos meses enriquecedores por su alto nivel internacional. Gracias también al Prof. Dr. Markus Beckmann, de la Cátedra de Gestión de la Sostenibilidad Corporativa de la Escuela de Negocios, Economía y Sociedad, de la Friedrich-Alexander-Universität Erlangen-Nürnberg, Nuremberg, Alemania. Mi gratitud por su tiempo, valioso criterio y experticia en el área de mi investigación; sus conversaciones permitieron centrar el tema de mi tesis en una aportación para la administración de organizaciones hacia la sostenibilidad. Debo también unas palabras de agradecimiento al Prof. Dr. Jouni Juntunen, Profesor de Prácticas de Producción y Consumo Sostenible, y a la Prof. Dra. Minna Halme, directora del *Sustainability Hub* y docente de Gestión de la Sostenibilidad, ambos de la Escuela de Negocios de la Universidad de Aalto, Espoo, Finlandia, por su grata acogida en la escuela y sus comentarios, fundamentales para definir la etapa final de mi tesis. Por otro lado, he de agradecer a la Prof. Dra. Sandra Sofia Ferreira Da Silva Caeiro, del Departamento de Ciencia y Tecnología de la Universidade Aberta, Lisboa, Portugal, por la oportunidad de compartir proyectos y colaboraciones; su disposición y experticia en el área de sostenibilidad en las universidades han sido fundamentales.

Mi inmensa gratitud y cariño a la Pontificia Universidad Católica del Ecuador Sede Santo Domingo (PUCE SD) Ecuador, por todos los años como estudiante, trabajadora y profesora; a mis profesores, que durante mi carrera me exigieron para dar lo mejor de mí, pero sobre todo a creer en mi capacidad. En especial, a mis antiguos jefes y compañeras/os, por esos grandes retos que pasamos juntos y que sembraron en mí la constante superación profesional, académica y

personal. Gracias Dra. Margalida Font Roig, Rectora de la PUCE SD, porque su enseñanza de profesionalismo, constancia y bondad, han sido mi mayor aprendizaje, reflejado también en esta tesis. Gracias una vez más por su amistad y sus consejos.

Gracias a mi familia, D. German Bayas, por sus tan oportunos comentarios a mis investigaciones. Gracias a D. Miguel Aguilar y Dña. Marli Pereira por ser mi segunda familia en Madrid, vuestro apoyo incondicional, consejos y palabras de ánimo han sido un gran aliento en este camino. Gracias a mis amigos y amigas que están en diferentes partes del mundo, pero que siempre me han dado sus consejos, ánimo y sonrisas. Un agradecimiento especial a Dña. Verónica Barrionuevo y Dña. María José Ojeda, por vuestra amistad y gran corazón.

Por último, pero no menos importante, mi eterno agradecimiento a mi familia. A mi abuela, Dña. María Dolores Rosario Pérez Castillo, el motor y fortaleza de todos mis días, gracias por dedicarnos todo su amor y cuidados durante toda nuestra vida. Dña. Casilda Cecilia Aldaz Perez, mi madre, por ser mi ejemplo a seguir, por creer en mí y compartir mis sueños como si fueran tuyos, por transmitirme tu constancia, fortaleza y valores, que me han permitido distinguirme como profesional. Mi mayor gratitud con todo mi corazón a D. David Ramiro Bayas Aldaz, mi hermano, por tu tiempo, apoyo, energía, inmenso amor, y entrega a nuestra familia, mi pilar. Gracias a mi sobrina Ashley Paola Bayas Vélez, por tu cariño y alegría, porque has sido mi motivación en mis esfuerzos por dejarte a ti y nuevas generaciones un mundo mejor. Gracias a mi padre D. David Mesías Bayas Aldaz (†) y a mi hermano D. Pablo Bayas (†), que desde el cielo guían mi camino todos los días, gracias por su esfuerzo y amor. Por cada momento vivido durante este sueño, mi mayor agradecimiento a mi esposo, D. Jani Heikkinen, por motivarme cada día a vencer mis miedos y debilidades, gracias por toda la sabiduría y la experiencia que me has transmitido, por tus palabras de aliento y fortaleza, gracias infinitas por

tu paciencia, comprensión y amor en el día a día de esta etapa. Gracias por haber convertido este sueño en nuestra prioridad como pareja. Esta Tesis Doctoral es el sueño y esfuerzo de mi familia y esposo, a quienes dedico este logro.

¡Gracias a todos!

*Madrid, 20 de mayo de 2019*

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**ABSTRACT**

Currently, environmental solutions are being searched for to enhance people's quality of life in cities, which is a realistic goal. Public and private actions not only include influential activities but also real scientific, technological, and innovative capabilities that can be integrated toward new initiatives. Such initiatives may contribute to the sustainable development (SD) of cities as well as their economic development.

Universities' role in city settlements as well as their local impacts, such as employment, revenue generation, positive environmental management practices, and human resources, are microcosms that reflect an idea traditionally focused on education, research, and knowledge transfer. They now have the new challenge of contributing to the SD of their community.

Against this background, this doctoral thesis focuses on Spanish universities' management of SD, and specifically on the environmental management of campuses and environmental sustainability through this mission. The main research objectives were to identify the key perceptions of stakeholders, identify the integration of direct stakeholders' participation in university management models to develop policies toward SD, and finally to analyze sustainability and university topics reported on and presented by Spanish newspapers to the public.

This study employed a mixed-method design. The exploratory stage employed a quantitative method, with a survey used for data collection and an explanatory approach used for the data analysis. Probabilistic topic modeling algorithms were employed to explore and analyze the perceptions of society based on editorial content from national media outlets (2014–2017) using Latent Dirichlet Allocation (LDA).

Subsequently, a qualitative method was employed, which involved using focus groups and in-depth interviews to understand the perceptions of the university communities. This considered the opinions of members of the Social Council as an element of the interactions between society and institutions, student representatives, academic experts, and eco-campus managers.

The originality of this study is that it provides a useful knowledge base for superior governance, planning, and management, which will strengthen the integration of active, participatory roles of primary and secondary stakeholders, as well as society as a key stakeholder, for contributing to Spanish universities' management system toward sustainability, including their main concerns. Hence, this study attempted to translate their valuable information into innovation, engagement, interaction, and value creation of universities through the implementation of a stakeholder intelligence model. As such, this study proposed five variables: (*1) Promoting environmental sustainability through the mission of the university; (2) Assessment of universities' sustainable commitment; (3) Knowledge and assessment of universities' performance; (4) Environmental management on the campus; and (5) Principal barriers to introducing sustainable actions at universities.* These were embedded in the two elements of "Stakeholder Behavior and Perspective Analysis" and "Current and Potential Stakeholder Contributions' as well as social dialog.

The results are presented over two chapters together with an explanation of the outcomes and a short introduction to the method applied in each case. The first section of the results chapter focuses on "stakeholders' key perceptions on and participation in sustainability," which includes the most crucial factors of sustainability among universities for stakeholders, what universities are doing for SD through their mission, and campus performance, barriers, and challenges to implementing sustainable actions. Moreover, it means stakeholders'

participation in the management system of universities through their knowledge and level of information in sustainable themes. The second section of the results focuses on “society’s perception on ‘sustainability’ and ‘university’ based on newspaper coverage in Spain’, which includes the main trends in Spanish media toward sustainability and higher education during 2014–2017, as well as the relationship between the composition of press media agendas and the perception of university stakeholders.

This thesis concludes with a set of recommendations for the integration of stakeholder approaches into universities’ management models toward SD to encourage an active role and more efficient system. Finally, the results are presented in a concentrated format, together with limitations and recommendations for future research.

**RESUMEN**

La búsqueda de soluciones ambientales para una mejor calidad de vida en las ciudades es un objetivo realista. Las acciones públicas y privadas no solo son actividades influyentes, sino también capacidades científicas, tecnológicas e innovadoras reales, que pueden incorporarse como nuevas iniciativas. Estas pueden contribuir al desarrollo sostenible de nuestras ciudades y su desarrollo económico. Además, el rol de las universidades en los asentamientos de las ciudades y su impacto local, como generadores de empleo, ingresos, buenas prácticas de gestión ambiental y recursos humanos. Microcosmos que reflejan una idea tradicionalmente centrada en la educación, en la investigación, y la transferencia de conocimiento; con un nuevo reto en la contribución del desarrollo sostenible de la comunidad.

En este contexto, el enfoque de esta Tesis Doctoral es la gestión universitaria en España hacia el desarrollo sostenible, específicamente en la gestión ambiental del campus y la sostenibilidad ambiental a través de la misión. Siendo así, el principal objetivo de investigación es identificar las principales percepciones de los *stakeholders*, identificar la integración de la participación de los *stakeholders* directos en el modelo de gestión universitaria, para desarrollar políticas hacia el desarrollo sostenible y, finalmente, analizar los temas de sostenibilidad y universidades informados y representados por los periódicos españoles al público en general.

Se utilizó un diseño de método mixto para el análisis de datos mediante un enfoque explicativo. Se aplicó un método cuantitativo, con las técnicas de recolección de datos de encuestas en la etapa exploratoria, y los algoritmos probabilísticos de modelado (*probabilistic topic modelling*) para explorar y analizar la percepción de la sociedad basada

en el contenido editorial de los medios de comunicación nacional (2014-2017), utilizando el *Latent Dirichlet Allocation* (LDA). Seguidamente, por el método cualitativo, basado en técnicas de *focus group* y entrevistas a profundidad, para comprender la percepción de las comunidades universitarias, teniendo en cuenta la opinión de los Consejos Sociales como un elemento de la interacción entre la sociedad y las instituciones, representantes por estudiantes, expertos académicos y responsables de eco-campus.

La originalidad de este estudio es proporcionar una base de conocimiento útil para una mejor planificación y gestión de la gobernanza, que fortalezca la integración del papel activo y participativo de los *stakeholders* primarios y secundarios, así como de la sociedad y sus preocupaciones, como elemento clave para contribuir al sistema universitario español hacia la sostenibilidad. Por lo tanto, este estudio pretende convertir esta información valiosa en innovación, compromiso, interacción y creación de valor de las universidades, a través de la implementación del '*stakeholder intelligence model*'. Es así que se proponen cinco variables: *1. La promoción de la sostenibilidad medioambiental a través de la misión de la universidad, 2. Evaluación del compromiso sostenible de la universidad, 3. Conocimiento y evaluación del desempeño de la universidad, 4. Gestión medioambiental del campus, 5. Las principales barreras para introducir acciones sostenibles en la universidad*, para ser integradas en dos principales aspectos del enfoque de *stakeholders*, específicamente en el 'análisis del comportamiento y perspectiva de los *stakeholders'*, y la 'actual contribución potencial de los *stakeholders'*, además del dialogo social.

De este modo, los resultados se presentan en dos capítulos, junto con la explicación de los hallazgos y una breve introducción del método aplicado en cada caso. El primer capítulo de los resultados introduce 'las percepciones clave de los *stakeholders* y la participación en la sostenibilidad', es decir, los factores más importantes de la sostenibilidad entre las

universidades según los *stakeholders*, qué hacen las universidades para el desarrollo sostenibles a través de su misión y el desempeño del campus, barreras y desafíos para la implementación de acciones sostenibles. Por otra parte, la participación de los *stakeholders* en el sistema de gestión de las universidades a través de su conocimiento en temas de sostenibilidad.

En el segundo capítulo de los resultados, 'la percepción de la sociedad sobre "sostenibilidad" y "universidad" basada en la cobertura de los periódicos en España', se incluyen las principales tendencias en los medios de comunicación españoles hacia la sostenibilidad y la educación superior entre los años 2014 y 2017, así como la relación entre las composiciones de las agendas de los medios y la percepción de los *stakeholders* de las universidades.

Esta investigación concluye con un conjunto de recomendaciones en el enfoque de la integración de los *stakeholders* en el modelo de gestión universitario hacia el desarrollo sostenible, para fomentar el rol activo y un sistema más eficiente.

# CHAPTER 1: INTRODUCTION

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## Background and Context

During the last five decades, sustainable development (SD) has become a worldwide concern. The changes began in the early 1970s with a historic landmark in the form of the first United Nations (UN) Conference on the Human Environment (UN, 1972). In this conference, UN member states began to question and mark lines of divergent thoughts regarding the economic models that did not solve environmental problems.

In 1987, the UN created the World Environmental Commission with the aim of seeking new models of SD and ensuring the availability of existing resources for future generations. The Brundtland Report (1987) was a constitution of the latent ideas for addressing the needs of the time without compromising those of the future.

The successive summits held in Rio (1992) and Cairo (1994) and later the Millennium Summit (2000) raised the issue of climate change and sustainability of the environment. In 1990, more than 290 university presidents and rectors from more than 40 countries signed the Talloires Declaration (Association of University Leaders for a Sustainable Future [ULSF]) in France, which was an action plan with 10 voluntary points for building a sustainable university. This declaration was part of the 1992 Earth Summit in Rio, and subsequently the Kyoto Declaration adopted by the International Association of Universities (IAU) in 1993.

All of these statements were reaffirmed in Chapter 36 of Agenda 21, which more

than 1000 universities signed, as well as the Copernicus University Charter for Sustainable Development managed by COPERNICUS Campus (Calder & Clugston, 2003).

The Rio +10 Earth Summit (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2002) recognized the strong linkage between SD, poverty eradication, and the modification of unsustainable patterns of production and consumption, as well as the protection and management of resource-based economic and social development.

The Rio +20 UN Conference on Sustainable Development (2012) coincided with the strong effects of the global economic crisis, which led to highly limited agreements. This time the participating member states highlighted the adoption of a 10-year plan of new standards for sustainable production and consumption. This conference resulted in the launch of negotiations to establish the UN's Sustainable Development Goals [SDGs] and the creation of a new global indicator of wealth that did not only consider gross domestic product (GDP).

In Europe, the European Union (EU)'s long tradition of protecting the environment stands out, beginning in 1973 with the creation of the Committee on the Environment in the European Parliament and launch of the first Environmental Action Programme 1973-1976. With the signing of the Maastricht Treaty (Council of The European Communities, 1992), community actions related to the environment gained prominence; in particular, Article 6 of the treaty stipulated integrating environmental protection in all policies and activities of the EU.

Other critical moments in Europe were in 1994 with the creation of the European Environment Agency; in 1997 with the Treaty of Amsterdam on balanced and sustainable development; in 2000 with the Lisbon Strategy; and in 2001 with the European Commission's proposal to the Goteborg European Council on Sustainable Development in Europe for a better world, the strategy of the EU for SD. Furthermore, the sixth Environmental Action Programme 2001 was launched in 2001, and the Kyoto Protocol on Climate Change was ratified in 2002.

In 2005, the Commission of the European Communities released its 2005 Review of the EU Sustainable Development Strategy: Initial Stocktaking and Future Orientations. This document raised important progress in preparation for furthering a strong integration of proposals for SD, to avoid serious problems that economic models assume about the environment and quality of life of citizens.

Another key aspect in the abovementioned review was the EU its members' investments into emphasizing science and technology for SD to promote eco-innovation in research programs. Complementary to this, it sought to maximize positive synergies and effectively to meet new challenges; moreover, the need for more innovation, research, and education for a cohesive and prosperous society through a global responsibility was presented as fact (European Commission, 2011).

In addition, the European Commission (2012) has defined medium- and long-term energy strategies, which were included in its Energy Roadmap 2050, the goal of which is to reduce greenhouse gas emissions by 80–90% below their 1990 levels by 2050. Subsequently, the European Commission presented Horizon 2020, the most significant

EU research and innovation program ever with €80 billion of funding available from 2014 to 2020 (ibid). The initiative is aimed at securing Europe's global competitiveness and smart, sustainable, and inclusive growth and jobs.

Horizon 2020 includes a multiannual work program, which in some of the sections covers societal challenges, focusing on secure, clean, and efficient energy; smart, green, and integrated transport; climate action; the environment; resource efficiency; and raw materials among other topics.

In 2015, UN countries adopted the 2030 Agenda for Sustainable Development and its 17 SDGs (UN, 2015), which are monitored using 99 indicators, calling on all member states to pursue strategies that combine economic development, social inclusion, and environmental sustainability. The same year, in the Paris Agreement at the COP 21 in Paris, all countries agreed to work to limit the global temperature rise to well below 2°C, and given the grave risk, strive for 1.5°C. This Agreement is part of SDG 13.

Recently, the 2018 SDG Index and Dashboards ranked Spain 25$^{th}$ in a global ranking of 156 countries. Some of the principal challenges are SDGs 9 (innovation), 12 (consumption and production), 13 (climate action), and 14 (life below water), which are represented in red color; this means at least two indicators are in the lower bound, and this classification reflects that the country must overcome significant obstacles to achieving the SDGs (SDSN Secretariat and the Bertelsmann Stiftung, 2018).

## Statement of the Problem and Need for the Study

At present, numerous policies and regulations exist that are aimed at achieving a positive impact on SD, in social and economic fields as well as in the environmental context at European and national levels; as an example, it is easy to identify the successful experience in the research and development (R&D) sector and the transfer of knowledge and technologies applied to SD. However, all these summits, agreements, regulations, and policies over almost four decades have not been enough to answer the continuous evolution of the environment and society as well as the critical needs in term of conservation.

Furthermore, environmental education has played a crucial role in educating society, creating future leaders, and developing tools, programs, and actions that can help social structures consolidate sustainable environmental challenges. Universities possess unique characteristics and organizational conditions for providing inspiration and guidance to and influence over other sectors to call for attention to participating in real actions for SD problems.

In Spain, only 1.2% of the State's General Budget of 2018 was for R&D and innovation in energy, environmental, and technological research; a research line with the lowest rate in the region (El Observatorio Español de I+D+I [ICONO], 2018).

The CRUE (Conference of Rectors of Spanish Universities), is the main interlocutor for universities with the government and plays a key role in all normative development that affects higher education in the country. Furthermore, it promotes initiatives of different dimensions with the productive and social system and institutional

relations to add value to Spanish universities. In 2009, the CRUE constituted the sectoral committee for sustainability; the main objective was to collect the experiences of universities in environmental management and the different processes and practices of the university community, as well as work on risk prevention.

Thus, Spanish universities began their commitment to developing a balanced community based on sustainable norms. Different concepts and definitions of and approaches to sustainability vary depending on who is defining them; however, each emphasizes that activities are ecologically sound, socially just, economically viable, and humane, as well as that they will continue to be so for future generations (Clugston & Calder, 1999).

Three main aspects—namely economic, social, and ecologic—must be connected at different levels, because every variable has its priority considering the perception of each individual. Hence, a university campus can be considered a model of good practices and actions considering that they are similar to cities, encourage the economic and social development of cities, and can be agents that help to reduce the impact in local settlements.

Currently, 28 Spanish universities are ranked in UI Green Metrics from a total of 76. According to Alba-Hidalgo (2015), only half of the universities in his study on 25 Spanish universities had a specific office to manage their sustainable environment. Therefore, a critical gap exists in the consolidation of stakeholders' active role in the management model of sustainable universities.

In this thesis, I present an analysis and assessment of a social dialog; it involves

primary and secondary stakeholders of Spanish universities and focuses on the integration of stakeholders' approach in the management system. For embedding as well as general society's participation, this group of stakeholders could guide collective behavior, provide innovation as well as strategic information to improve universities' management models toward SD.

Consequently, this study takes Freeman's stakeholder intelligence model (Freeman, Harrison, & Wicks, 2007; Freeman et al., 2018) as a basis, which develops stakeholders' participation, integration, and contribution, thereby making the organization more effective. Furthermore, it promotes an active role in a model of ownership and utilizes it in the organizational strategic planning process in the medium and long term.

This thesis addresses one of the objectives of the project "Research on energy efficiency and sustainable transport in urban areas: Analysis of scientific development and the social perception of the subject from the perspective of metric information studies" (INETSU) (cso2014-51916-c2-1-r), which was funded by the Spanish Ministry of Economy and Competitiveness (2015-2018).

I have been involved in the abovementioned project as a researcher in training, FPI-UAM "Formación de Personal Investigador de la Universidad Autónoma de Madrid" for the last 4 years. Additionally, I have been working in the Business Organization Department for the Faculty of Economic and Business Sciences, and a member of the Research Institute for Higher Education and Science (INAECU), which belongs to Universidad Carlos III de Madrid and Universidad Autónoma de Madrid.

My motivation for conducting this research was to encourage a social dialog that can incorporate the opinions and perspectives of the universities' stakeholders about

knowledge, awareness, commitment, mission, and actions, thereby promoting sustainability in the universities, developing a more positive daily lifestyle for a better future, and improving their management models. Furthermore, this research takes into account that universities should contribute to the sustainable development of their city, as well as being active at the interface between the local and the global communities; they should not only address local sustainability issues but also using their global tentacles and networks to take advantage of perspectives and expertise grounded in contexts elsewhere (Wals, 2014).

The great importance of stakeholders' participation as part of this study is based on their attitudes and behaviors during their daily activities. This study sought to connect interests for moral conduct with the process of value creation, increasing innovation and developing the potentially valuable information provided by groups of stakeholders.

These groups are represented by the Social Council, which includes students, professors, academic directors, administration directors, external business executives, and members of different external entities. Thus, they participated to generate a commitment to the university government and supervise the funding for universities, as well as to the impact of the university in society. The study was focused on student representatives, academic authorities in the environmental area, and managers of eco-campus offices, as well as on the opinion of the general society highlighted in newspaper coverage.

Furthermore, this study aimed to influence the dimension of university governance and strengthen the attention to new initiatives capable of contributing to the sustainable development of our cities and campus considering small cities on a smaller scale.

Thus, my main research objective was to identify the perception of stakeholders concerning sustainability in Spanish universities, to identify the integration of

stakeholders' participation in university management models, develop policies toward SD, and finally analyze the general society's opinions about sustainability in Spanish universities.

Consequently, this doctoral study fills the gap in business organization knowledge and the transdisciplinary approach to SD in universities in Spain through introducing the stakeholder intelligence model as a strategic thinking gain for SD in Spanish universities, as well as through integrating active roles of stakeholders into their management systems. In addition, the press media coverage at local, regional, and national levels was used as an intermediary of public opinion to be formed. By doing so, universities' contribution to society can be maximized through addressing sustainable topics that are represented as important drivers correlated with participation of the community, thereby providing a manage-for-stakeholders approach.

The following series of research questions (RQs) were formulated:

(RQ1) What are the key perceptions of stakeholders about sustainability in Spanish Universities?

(RQ2) How can direct stakeholder participation be integrated into a university management model to develop policies toward SD?

(RQ3) How were sustainability- and university-related topics reported and portrayed by Spanish newspapers to the public?

To answer these RQs, this Doctoral Thesis employs the following structure.

## Thesis Structure

This thesis has six chapters, the remainder of which are organized as follows. Chapter 2 comprises the literature review and theoretical framework of the study. It is divided into two main parts: Part I covers SD in a higher education contextual background; concepts, models, and elements of a sustainable campus; the process and dynamics of sustainable assessments in higher education; and one of the most important references—Green Metrics. Part II focuses on the theory of stakeholder management in universities; it presents the origin of stakeholder management, crucial definitions, and its application in other areas of organizational management. Additionally, it discusses the importance of stakeholders for the organization, managing for stakeholders, and strategies for creating value. Next, I translate these concepts into sustainable environmental management at universities and the key stakeholders, the importance of their perceptions from different studies of other authors, as well as the correlation of media toward sustainability. Finally, I provide an outline of the Spanish higher education system: its governance, Social Councils, student representatives, academic experts, and eco-campus managers, as well as relevant themes for Spanish universities.

In Chapter 3, the methodologies of this study are presented, which are based on a mixed-method study design, employing both qualitative and quantitative analysis. I present the central RQs in further detail along with their sub-RQs, as well as the data collection and sample. The first method applied was an exploratory survey based on descriptive statistics from an explanatory approach. This technique provided numerical variables to describe and compare from the mode, mean, and timed mean, which were the

primary findings used as a starting point for the research. In the first stage, four surveys were conducted for Social Councils, student representatives, academic experts, and environmental managers. The questionnaires included six key factors to learn their backgrounds and general knowledge about the theme, their main interests and concerns, and a holistic perspective about their university's performance and initiatives toward sustainability. Hence, a high number of universities participated: 44 universities' student representatives, 16 universities' academic experts, 13 universities' environmental managers, as well as Social Councils from 11 autonomous regions. Second, qualitative techniques were organized as follows: seven focus groups, which included student representatives, Vice-Chancellors, and Eco-campus members. This process was conducted using semistructured questions based on the variables and findings from the first stage. This was to explore key perceptions and attitudes more in-depth and interact with participants to construct argumentative statements and share their experiences to disclose potential answers to the RQs. The second qualitative technique was in-depth interviews; five semistructured interviews were conducted with crucial participants from five universities, who were also heads of specific chairs of the "Sustainability workgroup" at CRUE and the delegated students representatives at national level, respectively. The core of the discussion was focused on the six key factors from the earlier surveys to complement the findings and uncover their personal opinion and approach to these matters and factors, taking into account their role as experts and leaders in their areas. Finally, the third method employed was topic modeling, an unsupervised text analysis method of big data or the large-scale collection of documents to produce a set of topics able to describe patterns, main themes, their connections, and how the themes change over time. The method explored 41,316 news articles from Spanish media

outlets in the MyNews database. These articles included the keywords “sustainability” and “university” as a wide representation of the theme to be analyzed for the third RQ.

Chapter 4 elucidates the results from the quantitative and qualitative data collected; these results are based on RQ1 (What are the key perceptions of stakeholders about sustainability in Spanish universities?) and RQ2 (How can direct stakeholder participation be integrated into university management models to implement policies toward sustainable development?) This chapter includes in its first section an approach to the mission of the universities, the most relevant themes for stakeholders, environmental management at the universities, and the universities’ main barriers and challenges to implementing sustainability. The second section embraces the contribution of stakeholders’ participation in the management system of universities through their knowledge and level of information in sustainable themes.

Chapter 5 addresses RQ3 (How were sustainability- and university-related topics reported and portrayed by Spanish newspapers to the public?) The findings describe main trends in Spanish newspapers through the years 2014–2017 (from January to June), and the relationship between the composition of media agendas and perception of stakeholders that were presented in Chapter 4.

Finally, Chapter 6 presents a summary of the most relevant findings of the dissertation and possible factors to comprise in SD management from a stakeholder approach in Spanish universities. Furthermore, it provides conclusions to answer the RQs as well as recommendations, limitations, and future lines of research.

Moreover, the last part of the doctoral study contains references for each chapter

followed by several relevant appendixes to complete the dissertation. Each chapter contains an introductory paragraph as well as a summary at the end to orient the reader to its overall focus.

# CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

# CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

This chapter presents the global theoretical context of SD in higher education institutions (HEIs). It describes the importance of universities' participation for solving global challenges and the different dimensions and models that academics have suggested to foster environmentally sustainable practices. Consequently, it describes the integration of the active role of stakeholders in the management model of universities. The second part of the chapter introduces references from relevant literature to understand the stakeholder management approach for achieving a more SD-oriented university through the main missions.

## Part I – Sustainable Development in Higher Education

### 2.1 Background of Sustainable Development in Higher Education

A variety of definitions exists for SD in the literature depending on the context. As stated by Clugston and Calder (1999), every approach depends on the point of view and interest of the institutions or policy-makers to conceptualize the term. Furthermore, through the years, many countries and institutions have signed worldwide declarations, which have been a strategic boost to the enhanced understanding of sustainability challenges and their immediate attention. Some of these definitions have developed and emphasized environmental aspects, social injustice, and economic and social imbalance.

In 1972 during the Stockholm Conference, the UN introduced environmental concerns and interests to the world, formally acknowledging the role of education as a key factor for protecting the environment and conservation:

> Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension (UN, 1972, sec. 19).

Furthermore, the concept according to the World Commission on Environment and Development: "Sustainable Development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs […]" (The Brundtland Report, 1987, Chapter 2, parr 1). In this sense, SD is a "process of change in which the exploitation of resources, the direction of investments, the orientation of technological developments and institutional changes are all in harmony and enhance current and future potential developments to meet human needs and aspirations" (The Brundtland Report, 1987, sec. I, parr 30).

Thus, sustainable universities described a multidisciplinary integration for Velazquez and co-authors:

> HEI is whole or as a part, that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfill its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles (Luis Velazquez, Munguia, Platt, & Taddei, 2006, p. 812).

This term is also a link to an equal distribution and emphasizes the requirements for the integration of an economic development compatible with a safe environment, biodiversity, and ecological balance (Quaddus & Siddique, 2001).

Hence, over the past two decades, HEIs worldwide have implemented different initiatives for the SD of their communities, in their research, education, public services, and on-campus operations. They integrate universities' commitment to social challenges through acquiring different declarations and globalized objectives. Table 1 summarizes the declarations, charters, partnerships, agreements, and statements that have demonstrated the commitment of worldwide leaders, nations, and HEIs to endorsing sustainability as a priority.

| Name | Year | Relevance |
|---|---|---|
| **Stockholm Declaration on the Human Environment, UN Conference on the Human Environment, Sweden.** | 1972 | First declaration of preservation and improvement of the human environment, which included education in environmental matters, (principle 19). |
| **The Belgrade Charter, Belgrade Conference on Environmental Education, Yugoslavia.** | 1975 | A global framework for environmental education. |
| **Tbilisi Declaration, Intergovernmental Conference on Environmental Education, Georgia.** | 1977 | The world's first intergovernmental conference on environmental education. |
| **"Our Common Future," The Brundtland Report** | 1987 | This was an urgent call for action by the General Assembly of the UN, based on the previous declarations. |
| **Talloires Declaration, Presidents Conference, France** | 1990 | The first official statement made by university presidents, chancellors, and rectors on a commitment to environmental sustainability in higher education. |
| **National Council for Science and the Environment.** | 1990 | Originally the Committee for the National Institute for the Environment, its mission was "to improve the scientific basis for environmental decision-making by bringing about the establishment of the National Institute for the Environment (NIE) and supporting the successful implementation of its principles and programs." |
| **Halifax Declaration, Conference on University** | 1991 | It discussed the role of universities in improving the capacity of countries to address |

| Name | Year | Relevance |
|---|---|---|
| **Action for Sustainable Development, Canada** | | environmental and developmental issues at local, regional, national, and international levels. |
| **Report of the UN Conference on Environment and Development (Rio Conference)** | 1992 | Agenda 21, Chapter 36: Promoting Education, Public Awareness and Training, and Chapter 35: Science for Sustainable Development. |
| **Association of University Leaders for a Sustainable Future founded, USA** | 1992 | It was founded under the name of The Secretariat of University Presidents for a Sustainable Future as a direct result of the Talloires Declaration. |
| **Kyoto Declaration, IAU Ninth Round Table, Japan** | 1993 | It comprised research, education, cooperation, and outreach, and was the first to encourage the revision of their operation. |
| **Swansea Declaration, Association of Commonwealth Universities' Fifteenth Quinquennial Conference, Wales** | 1993 | It focused on the topic of people and the environment, including all segments of society; it also added the dimension of equality among countries as a crucial factor in achieving sustainability. |
| **COPERNICUS University Charter, Conference of European Rectors (CRE), Geneva** | 1993 | It incorporated an environmental perspective into all universities through multidisciplinary integration and a collaborative mission outside of universities through networking and partnerships. |
| **Second Nature founded** | 1993 | It has worked with over 4000 faculty members and administrators to help make the principles of sustainability fundamental to every aspect of higher education. |
| **Ball State University Greening of the Campus conferences, USA** | 1996-1997-1999-2001-2003-2005-2007-2009-2012 | The conference proposed diverse areas in university communities to share on environmental issues. In previous years the topics were: The next step, theory and reality moving to the mainstream, connecting to place, extending connections, collaborating for sustainability, embracing change, and building pedagogy. |
| **Thessaloniki Declaration, International Conference on Environment, and Society: Education and Public Awareness for Sustainability, Greece** | 1997 | This declaration was similar to the environmental sustainability concept with poverty, population, health, food, security, democracy, human rights, and peace, as well as assigned special priority to education, public awareness, and training. |

| Name | Year | Relevance |
|---|---|---|
| **World Conference on Higher Education, Paris** | 1998 | Added the contribution to the SD and improvements of society as part of the core mission of the higher education system. |
| **World Conference on Science, Budapest** | 1999 | It contributed to the role of science with a prosperous and sustainable world through the integration of economic, social, cultural, and environmental dimensions. |
| **Millennium Development Goals, NY** | 2000 | Reaffirmed Agenda 21 and then the Kyoto Protocol; it included a reduction in emissions of greenhouse gases. |
| **Global Higher Education for Sustainability Partnership (GHESP)** | 2000 | Founding partners: COPERNICUS, IAU, ULSF, and UNESCO. |
| **Lüneburg Declaration on Higher Education for Sustainable Development, Germany** | 2001 | Encouraged the creation of global learning and specific interactions with stakeholders. |
| **World Summit on Sustainable Development, Johannesburg** | 2002 | Integrated economic growth, conserving natural resources and the environment, as well as social development. |
| **Declaration of Barcelona** | 2004 | Focused on aspects of the educational process and institutional commitment as well as all decision-makers. |
| **UN Decade of Education for Sustainable Development** | 2005-2014 | The expectation for this decade highlighted the importance of education for citizens' awareness of a sustainable world, and the vision of regular and substantial coverage of SD issues in media. |
| **Graz Declaration on Committing Universities to Sustainable Development, Graz** | 2005 | Proposed including sustainability issues in the framework of the Bologna Process. Increased university interaction with stakeholders at all levels. |
| **Abuja Declaration on Sustainable Development in Africa: The role of higher education in SD, Nigeria** | 2009 | Addressed the mandate of HEIs regarding teaching, learning, research, and community service (including campus greening) as they related to SD in Africa. |
| **Torino (Turin) Declaration on Education and Research for Sustainable and Responsible Development, Italy** | 2009 | It included the 4Es (economics, ethics, energy policy, and ecology) as well as a special approach to governance and policy-makers. |
| **G8 University Summit Statement of Action,** | 2010 | It discussed three subthemes: sustainable energy, sustainable health, and sustainable |

| Name | Year | Relevance |
|---|---|---|
| **Vancouver** | | higher education. One of the recommendations for activities related to sustainable energy reduced the ecological footprint. |
| **People's Sustainability Treaty on Higher Education** | 2012 | A people's initiative for civil society to come together to develop a collective agreement beyond Rio +20. It also included the role of universities and stakeholder participation. |
| **Rio +20: Statement by the Higher Education Sustainability Initiative, Rio de Janeiro** | 2012 | This focused on environmental protection, climate change, and a green economy; it recognized the important role that sustainable energy contributes, as well as sustainable transport systems and an integrated approach to policy-making at all levels. |
| **Commitment to Sustainable Practices of Higher Education Institutions, Rio de Janeiro** | 2012 | This was an agreement to support the following: teaching SD concepts, encouraging research on SD issues, greening of campuses, supporting sustainability efforts in communities, and engaging with and sharing results through international frameworks. |
| **IAU Iquitos Statement on Higher Education for Sustainable Development, Iquitos** | 2014 | It promoted raising awareness for changing to more sustainable societies. It introduced campus greening and sustainability. |
| **Nagoya Declaration on Higher Education for Sustainable Development, Nagoya** | 2014 | It implemented the Global Action Plan on Education for Sustainable Development, which included a vision for creating a conducive environment to ensuring green campus. This declaration encouraged multi-stakeholders and multi-sector partnerships toward sustainable HEIs and societies. |
| **Transforming our world: The 2030 Agenda for Sustainable Development, New York** | 2015 | Proposed the 17 SDGs and 169 targets, which integrated a balance to the three dimensions of sustainable development (economic, social, and environmental) for the next 15 years. |
| **Paris Agreement, COP21 Paris Climate Conference** | 2015 | It agreed to limit the global temperature rise to well below 2°C, and given the grave risks, to strive for 1.5°C: "Affirming the importance of education, training, public awareness, public participation, public access to information and cooperation at all levels on the matters addressed in this Agreement." |
| **Marrakech Climate Change Conference, COP 22** | 2016 | This was focused on the implementation of the Paris Agreement; it called for the highest political commitment to combat climate change, financial support, and a global |

| Name | Year | Relevance |
|---|---|---|
| | | partnership. |
| **Higher education Sustainability Initiative, New York** | 2017 | Follow-up and review of the 2030 Agenda SDG. Provided countries the opportunity to share their experiences and strategies for advancing the SD agenda. |
| **COP 23 Bonn** | 2017 | It developed a complementary matter relating to "Article 12 of the Paris Agreement and paragraphs 82 and 83 of decision 1/CP.21<br>a. Enhancing the implementation of education, training, public awareness, public participation and public access to information" (SBI). |

*Table 1: Declarations and agreements for sustainability in higher education.*

Note: Adapted and updated from (Calder & Clugston, 2003; Elliott, 2015; Rodrigo Lozano, Lukman, Lozano, Huisingh, & Lambrechts, 2013).

While SD definitions are based on the different declarations, as a principle (G8 University Summit, 2009) they focus on a sustainable ecosystem, not only including the role of universities in generating and disseminating knowledge but also emphasizing lifestyles practiced on and off campus, to help society and policy-makers understand the impact of their activities and promote governance for strategic development.

The latest in this series of conferences, the SDG (UN, 2015), defined a roadmap that included 17 SDGs. Particularly important to the present study is SDG 13, "Take urgent action to combat climate change and its impacts," which includes improving education awareness and human and institutional capacity for climate change mitigation, adaptation, impact reduction, and early warning.

The correlation between statements and the constant evolution of society and education throughout the years have presented sustainability as a priority to the world, generating support from key policy-makers, as well as including the engagement of different stakeholders. These different approaches to higher education as a potential contributor to creating global learning form the core mission of the HE system.

Therefore, it integrates diverse areas, connecting multidisciplinary partnerships and networking, as well as introducing more criteria that would help design a more participatory sustainable university model.

## 2.2 Sustainable University Role and Models

A sustainable university can be described as a university that, apart from seeking academic excellence, attempts to embed human values into the fabric of people's lives; a university that promotes and implements sustainability practices in teaching, research, community outreach, waste and energy management, and land use and planning through a continuous commitment to sustainability and its monitoring (Nejati & Nejati, 2013).

The first perspective, a 10-point action plan introduced in The Talloires Declaration, highlighted the major role of university missions in education as being to:

> Increase awareness of environmentally sustainable development, create an institutional culture of sustainability, educate for environmentally responsible citizenship, foster environmental literacy for all, practice institutional ecology, involve all stakeholders, collaborate for interdisciplinary approaches, enhance the capacity of primary and secondary schools, broaden service and outreach nationally and internationally and maintain the movement (ULSF, 1990, para.1-10).

In turn, universities educate people who would reflect fully integrated awareness, knowledge, skills, and values to the community in everyday activities. Cortese (2003) presented a higher education model of sustainability (Fig.1), which combines universities' activities aligned with the principles of sustainability.

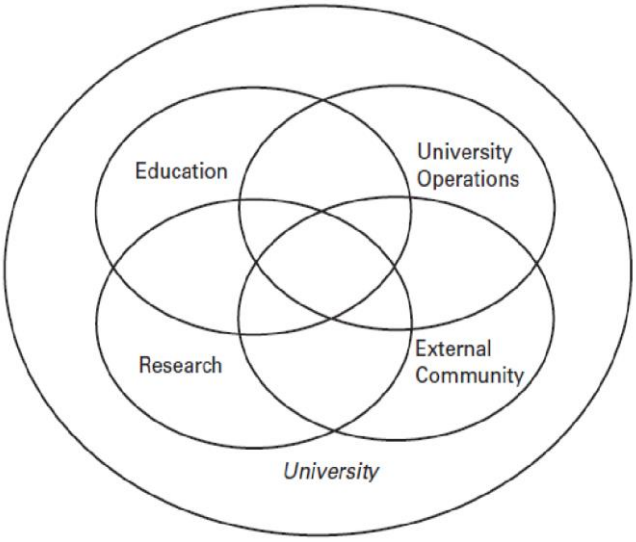


*Figure 1: Higher education modeling sustainability as a fully integrated system.*
Source: (Cortese, 2003).

In a local context, a Spanish university traditionally focused on environmental and sustainable dimensions proposed a scheme developing the role of a university, which is illustrated in Fig. 2.

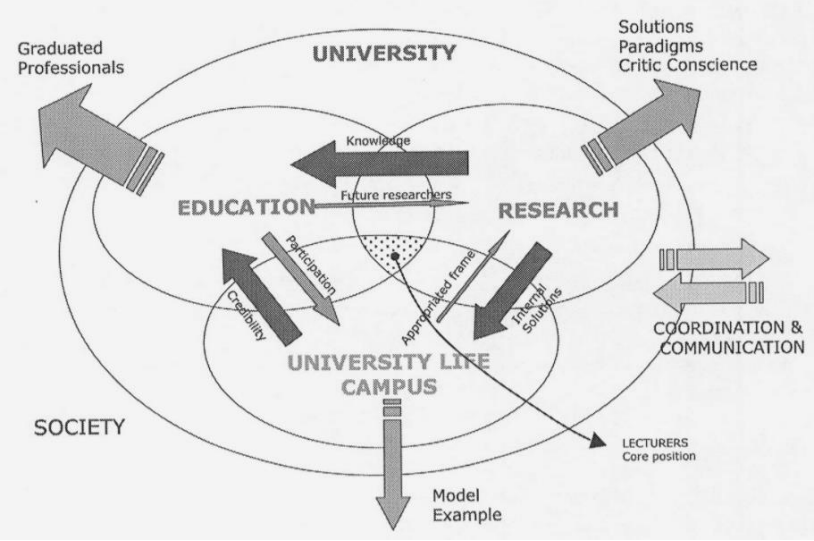


*Figure 2: The university's role in society regarding sustainability in EP2.*
Source: (Ferrer & Balas, 2004).

It combines simultaneous actions between the main activities of the universities, adding outputs to society, reflecting them in synchronized coordination and communication with the community.

The literature also provides a strategic management process based on the mix of different dimensions, giving special attention to HEI operations. The following model in Fig. 3 involves a plan from the general mission and vision of the institution to the operation activities. In fact, Luis Velazquez et al. (2006), authors of the top-down model for sustainable development within universities, suggested that this model depends on every university's reality and context, explaining that it is continual improvements in environmental, social, and economic performance and progressive development that must be implemented in every step with the participation of the different internal and external agents.

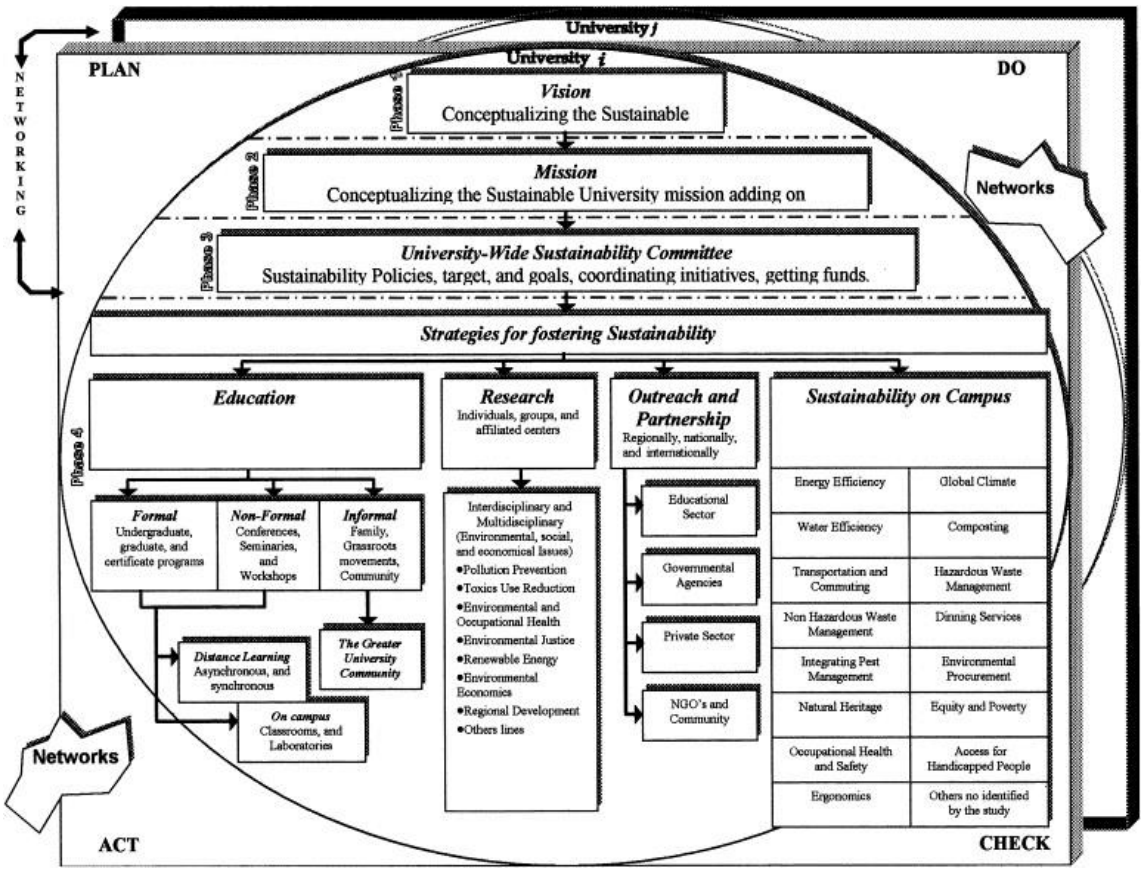


*Figure 3: The proposed sustainable university model.*
Source: (Luis Velazquez et al., 2006).

However, Beringer, (2007) combined "top-down" and "bottom-up" strategies of institutional transformation, which demonstrated the synergy of shared expertise in organizational leadership and management, operations, and academic areas, as well as the integration of internal and external agents.

Hence, the Declaration on Education and Research for Sustainable and Responsible Development (2009) expressed the critical roles that education and research must play in informing, promoting, and implementing sustainable and responsible development, which is facing the greatest challenges of new approaches within its

system. To implement this proposal, they introduced the 4 Es principles, presented in Fig. 4:


*Figure 4: The 4Es principles.*

Source: Adapted from the G8 University Summit (2009, p. 8) by the author.

These principles became a guide for the higher education system for preparing future decision-makers and creating new mental paradigms related to sustainability (M. del M. Alonso-Almeida, Marimon, Casani, & Rodriguez-Pomeda, 2015).

Subsequently, the report on the promotion of SD by HEIs in Sub-Saharan Africa compiled different interpretations of universities' roles from the declarations signed since 1977.

Figure 5 presents a model that provides a guide for addressing a better strategy for the whole process.

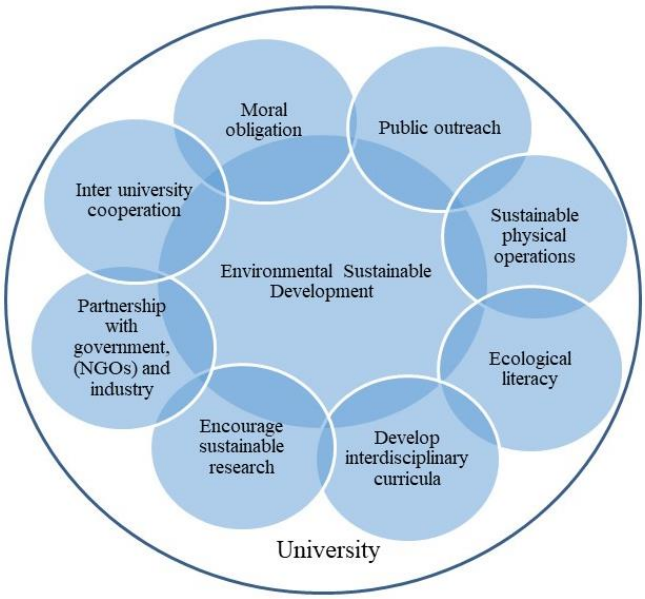


*Figure 5: The role of universities in ESD.*

Source: Adapted from the Association of African Universities (2011) by the author.

Universities, in addition to being formal institutions for educating society, have become a potential influencing power on industry and government policies to engage people in the community and encourage critical participation in the process of transforming for a sustainable future. Because of this commitment, the "green campus" is a reality and a lifestyle in university communities.

A significant challenge for HEIs is fostering "global citizens" who "better understand how the world works, their responsibilities, and the sustainability or otherwise of many activities building a safer and more sustainable future" (Stephen Sterling, 2011, p. 11). The principles of these models or systems strengthen the dynamics in (re)orienting universities' performance, recognizing the emerging areas or fields that many institutions should consider to diversify efforts, as well as simultaneously understanding all the roles of university communities and the importance of sustainable values that are part of the mission as an integrated master plan.

## 2.3 Sustainable Campus

Based on the concepts of several authors and declarations, the literature covers dimensions of sustainability involving the knowledge, values, attitudes, and skills required to empower society for generating the changes required to meet this challenge (IAU, 2001). The Kyoto Declaration on Sustainable Development encourages universities to review their operations to reflect the best sustainable practices (IAU, 1993) and to commit HEIs to promoting sustainable consumption practices in their campus communities with their activities.

Complementary to these approaches, a sustainable campus should also incorporate equity, social justice, resource conservation, waste reduction, and efficient environmental management to export these values. According to Alshuwaikhat and Abubakar (2008), a common comparison of university campuses exists that can also be a good practice model for the sustainable and environmental activities of a city.

This implies that universities have an impact and should consider:

> (i) Reducing their environmental footprint through energy, water, and material resource efficiency in buildings and facilities; (ii) adopting sustainable procurement practices in supply chains and catering services; (iii) providing sustainable mobility options for students and faculty; (iv) adopting effective programs for waste minimization, recycling, and reuse; and (v) encouraging more sustainable lifestyles. (Rio+20 UN Conference on Sustainable Development, 2012, para. 4 understanding this main aspect from the SD conference for a green campus).

Nonetheless, associating the definitions of a green campus and a sustainable campus definitions may lead to several interpretations because in the UNESCO Thesaurus, "green" is related to the green economy, green tourism, and the greenhouse effect. However, for some universities, green could be a term to link the efficient performance of the campus or environmental initiatives of campus infrastructures.

Furthermore, the term "green campus" has been utilized in numerous studies to represent "sustainable universities." According to Yuan, Zuo, and Huisingh (2013), in China, green universities have gained increasing recognition among HEIs; moreover, the multidimensional aspect of this definition has been well documented in some initiatives, such as the Tongji Declaration and the Green University China Network.

Therefore, in Fig. 6, the author presents a systematic and integrated approach for achieving a sustainable campus.

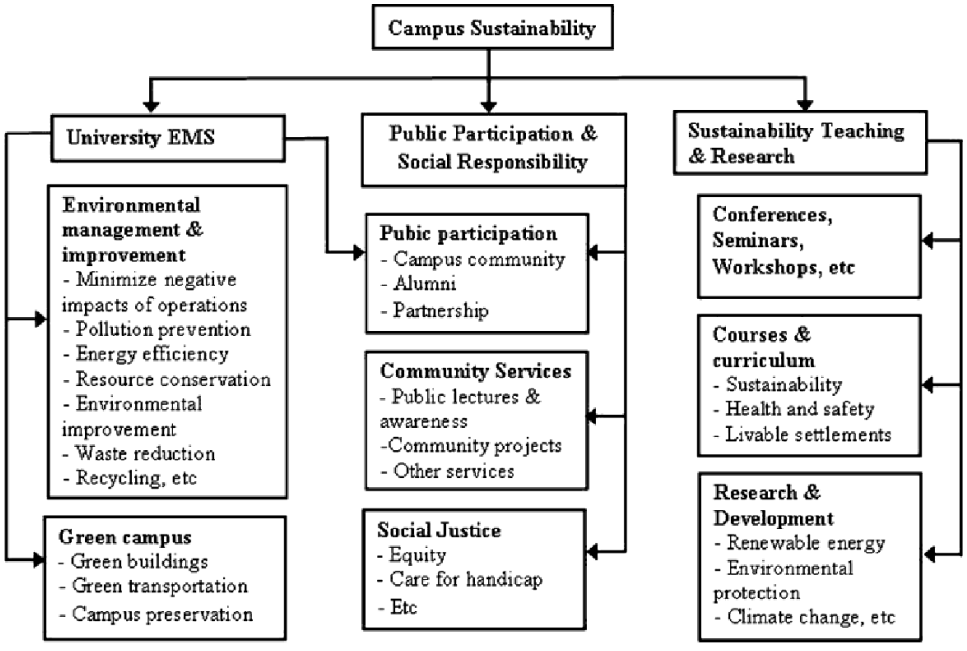


*Figure 6: Framework of the proposed approach to achieving campus sustainability.*
Source: (H. M. Alshuwaikhat & Abubakar, 2008).

This model was based on the case experience of the author and three strategies: European Eco-Management and Audit Scheme (EMAS)' implementation, public participation, and social responsibility, as well as sustainability teaching and research in an integrated manner. The EMAS establishes a set of overall practices, procedures, processes, and resources for implementing every initiative. The authors suggested that universities should initially constitute structured organizations that provide the necessary resources required to achieve any sustainable vision. Furthermore, when developing a sustainable campus, it is pertinent to consider the type and size of the different structures.

A model for a sustainable university must be an adaptive system, and in a continuous transformation be able to evolve with the reality of societies and ecosystems. Newman (2006, p. 635) argues that, "Sustainable development is a continuous process of change and is a process that must be treated as an evolution of ideas." Moreover, to provide directions for university strategies and practices, Hans van Weenen, (2000) proposed a possible model of a sustainable university, reflecting the relationship between humanity and nature, which is presented in Fig. 7.

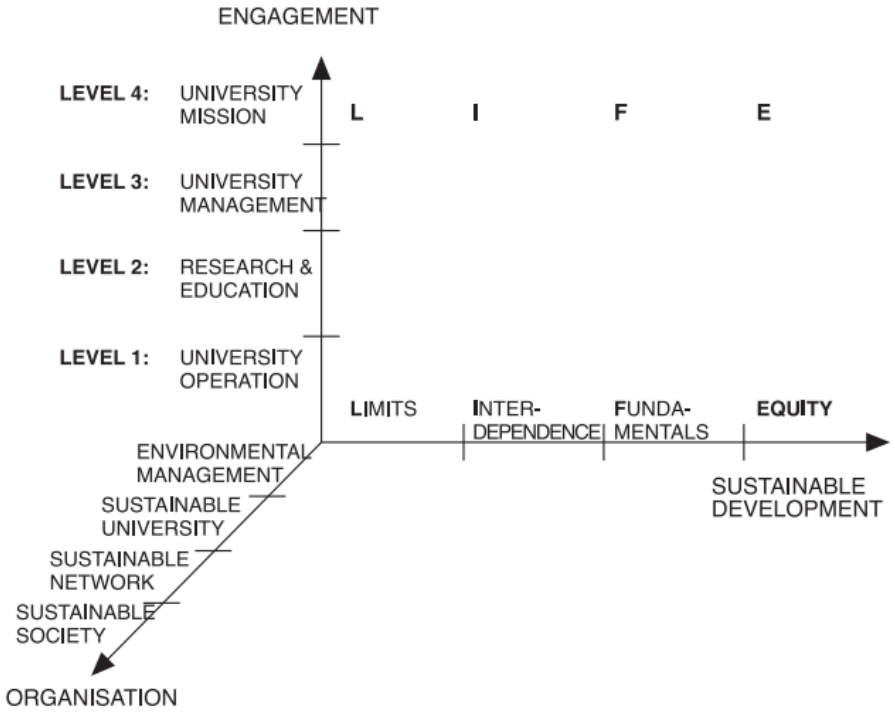


*Figure 7: The sustainable university classification model.*
Source: (Hans van Weenen, 2000).

Being committed to "LIFE": L is for limits, regarding the quality of life in an industrialized world, raising the appreciation of the values of human resources and their diversity. I is for interdependence, involving local resources adapting to ecosystem conditions. F is for fundamentals, included as a concept, paradigm, and system, the central objective of all HEIs' activities. E is for equity, and the equitable and fair distribution of the support and benefits of resources among developed and developing communities.

Moreover, universities' organization structures often tend to divide academic activities from operation activities depending on the cultural model. These management practices usually affect the correct implementation of sustainable environmental projects.

Thus, they must be understood as a whole systems approach that involves synchronized activities in a strategy model of a university.

Rodrigo Lozano et al. (2015) presented a basic system of elements to implement SD into a HEI's institutional framework: education, research, campus operations, outreach, collaboration, on-campus life experiences, and assessment and reporting. These elements helped the authors identify 70 HEIs worldwide, showing that many universities are engaged in sustainability efforts; however, this implementation has been compartmentalized and not holistically integrated throughout these institutions to ensure that SD is achieved; they suggested establishing short-, medium-, and long-term plans, as well as committing to policies and strategies that can combine interrelated elements.

Sterling (2011) shared the "4 Rs model," which was an effective first step to assessing, evaluating, and discussing how to start a change process toward ESD, from the universities' corporate plan to lecture plan and anything in between. The 4 Rs are as follows: Retain: what is useful, and relevant; Revise: through updating or revision; Reject: what is outdated or not valid; and Renew: through innovation and new ideas.

Thus, greening of campus operations (Waas et al., 2012) mean reorienting toward SD in an institution's model, providing an informal way of learning about sustainability for the academic community, which means implementing the theory into practice. Moreover, the implementation integrates SD into university life, which is a model of a small city (M. del M. Alonso-Almeida et al., 2015).

## 2.4 Sustainable Assessment in Higher Education

Given the abovementioned literature, sustainability assessments are defined as a management tool for capturing and processing the dynamics of sustainability efforts of

HEIs, reporting or assessing the current state of an institution, and communicating to stakeholders the achievements and developments in economic, environmental, and social dimensions (R. Lozano, 2006).

Prominent literature exists on assessment methods, indicators, and models from numerous authors such as M. del M. Alonso-Almeida et al., (2015, p.); M. Alonso-Almeida, Llach, and Marimon, (2014); Alshuwaikhat and Abubakar, (2008); Casarejos, Gustavson, and Frota, (2017); Clarke and Kouri, (2009); Fonseca, Alberto, Macdonald, Amanda, Dandy, Emily, Valenti, and Paul, (2011); and R. Lozano (2006). They have debated their approaches; most have focused on the sustainable environmental plan and their optimal tools for translating university initiatives into a common language. In addition, a theoretical premise exists regarding the type of studies introduced: reviews, the proposal of models or systems, case study or implementation, as well as the terminology of a particular author introduced as assessment, benchmarking, ranking, reporting, and appraisal.

Berzosa, Bernaldo, and Fernández-Sanchez, (2017) introduced a classification of the most commonly used tools, which is illustrated in Fig. 8; in contrast to other studies, this figure shows a classification according to four dimensions: Economic, Environmental, Social, and Education/Curricular.

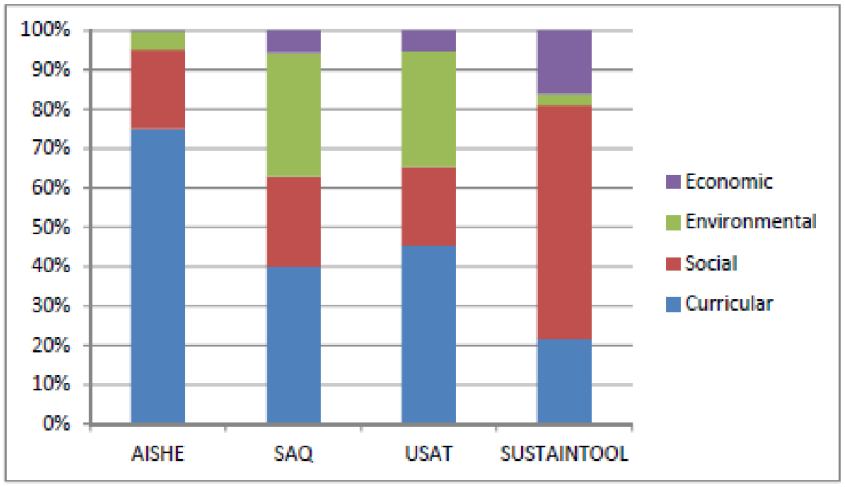


*Figure 8: Relative weight allocated by the tools for sustainability dimensions.*
Source: (Berzosa et al., 2017).

The different tools available in the aforementioned studies offer a comprehensive list of mechanisms, such as ISO 14001, EMAS, Higher Education 21 from the UK, the EMS Self-Assessment Checklist from the USA, the Auditing Instrument for Sustainability in Higher Education from Netherlands, the Osnabrück University model from Germany, the Sustainable University model from México, AISHE, the Campus Sustainability Assessment Framework from Canada, Global Reporting Initiatives, and GASU.

In general, most focus on the basic dimensions; however, there is a tendency toward the partnership of universities in local or national areas. This group of university policy-makers of associations has the pursuit of establishing a common language between them, the motivation to learn from the experiences of peers, and alignment of their systems and efforts to become a strong driver toward governance planning. Furthermore, they have adapted these tools to the reality of every university.

In the Spanish context, Abadía, Mariano, and Martín Vallespín (2012) analyzed accountability reports of a group of Spanish universities to identify sustainable and social

responsibility aspects and indicators, noticing that most of the universities' reports only included economic and financial indicators. Although many universities had different environmental initiatives as awareness campaigns and some are part of the sustainable declaration and statements, unfortunately they did not include metrics that could transform information into data. Because of this evidence, many HEIs started thinking more strategically; moreover, the new education system was a critical driving force to work by indicators.

The CRUE provided a framework of reference indicators to be used in different aspects. Previously it was limited to traditional accountability aspects. Currently, the University Sustainability Assessment group has developed some indicators, which are being applied as benchmark tools (see the following table 2 and figure 9).

| Areas | Aspects |
|---|---|
| Organization | 1. Environmental sustainability policy<br>2. Involvement and awareness of the university's community<br>3. Social responsibility, relations, and involvement with society |
| Teaching and research | 4. Teaching<br>5. Research and knowledge transfer |
| Environmental management | 6. Urban planning and biodiversity<br>7. Energy<br>8. Water<br>9. Mobility<br>10. Waste<br>11. Green procurement<br>12. Evaluation of the environmental impact of university activities |

*Table 2: Areas and aspects from the CRUE University Sustainability Assessment Tool.*
Source: (Assessment of Sustainability at Universities - working group CRUE, 2015)

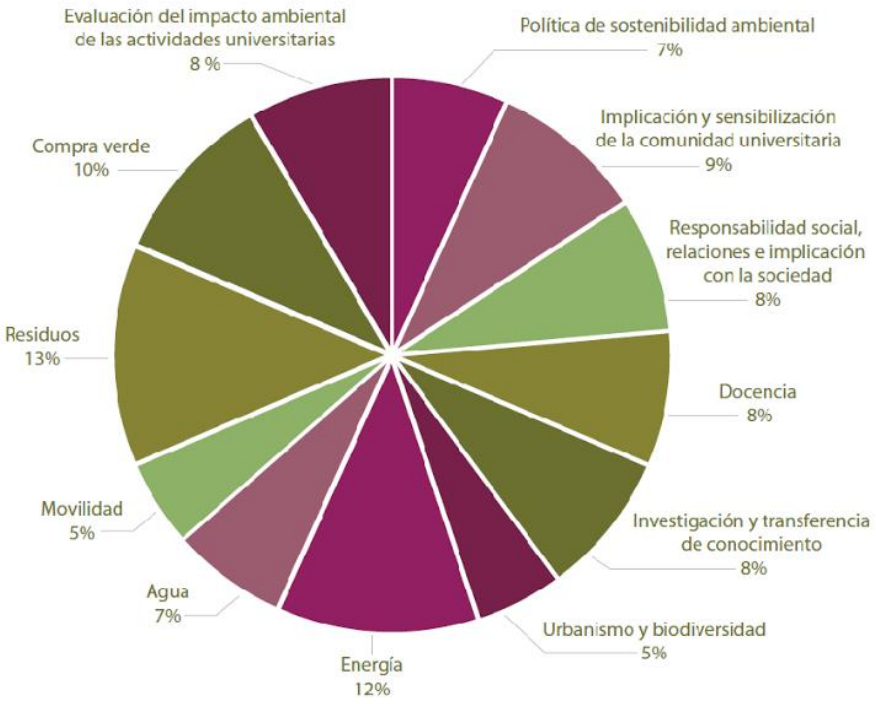


*Figure 9: The virtuous cycle of sustainable development in universities.*
Source: (Alba-Hidalgo, 2015).

The GESU model from the CRUE involves a self-assessment with a range of 0 (no) and 1 (yes) with an answer between both having a value of 0.5 and a total of 175 indicators.

Therefore, the sustainable environmental concern is visible for all disciplines in Spanish universities to contribute toward, and employ actions and initiatives step by step to set a sustainable plan integrated by the HEI community, even before the incorporation of the GESU model. The literature review revealed the example of Universidad Politécnica de Cataluña. In 1996, Ferrer and Balas (2004) presented a plan to carry out the university's environmental commitment and, as a pioneer, establish a formal Environmental Plan Coordination Office, which introduced EP2 indicators covering the

following areas: education, research and doctoral programs, university and campus life, coordination and communication, as well as many other actions.

Table 3 shows some of the projects by area where many universities became a reference to other HEIs and municipalities alike, considering these campuses' models for cities in good practices.

| Area | University | Project |
|---|---|---|
| **Waste management and minimization** | Universidad Miguel Hernández | Minimization plan for hazardous waste |
| | Universidad de Oviedo | Use of tap water sources to reduce the consumption of bottled water |
| | Universidad de Lleida | The internal web page of recycled material for reuse |
| | Universidad Da Coruña | University composting center |
| **Water management** | Universitat de les Illes Balears | Protection of wet areas and sewage treatment by a lagoon system |
| | Universitat de Lleida | Rainwater collection for irrigation |
| | Universidad de Murcia | A symbiotic water treatment plant |
| **Energy management** | Universidad de Alcalá | The impulse in energy measures: cogeneration, geothermal, energy saving, and efficiency actions |
| | Universidad de Vigo | Promotion of sustainable energy |
| | Universidad de León | Energy efficiency system |
| **Management of mobility and transport** | Universidad Autónoma de Madrid | CibiUAM: Integral bicycle center |
| | Universitat de Girona | e-hitchhiking: Implementation of a safe, flexible, and reliable carpooling system |
| | Universidad de León | Bicycle lending service |
| **Design, urban planning, and sustainable construction** | Universidad de Zaragoza | Sustainable building of the Center for Research Resources and Energy Consumption (CIRCE) |
| | Universidad de Alicante | Sustainable Landscape to equip the green areas of the campus |
| | Universidad de Murcia | ECOCAMPUS garden program |
| **Green and environmental criteria in procurement** | Universitat de Barcelona | A green shopping kit as an awareness tool |
| | Universidad Carlos III | Environmental criteria in the cleaning contract |

| Area | University | Project |
|---|---|---|
| **Actions of environmental education and participation** | Universidad de Valencia | Review of new undergraduate degrees from the viewpoint of sustainability |
| | Universidad de Salamanca | Curricular environmental actions within the European Higher Education Area |
| | Universitat de Girona | Addition of transversal competence in sustainability in undergraduate programs and a teaching support guide |
| | Universitat Autónoma de Barcelona | Environmentalization of events |
| | Universidad de Santiago de Compostela | Coordination structure of the Sustainable Development Plan |
| **University environmental sustainability strategies** | Universidad de Granada | Implementation of an environmental management system (ISO 14001) |
| | Universidad del País Vasco | The EKOSCAN certification process on the university campus |
| | Universidad de Cantabria | Agenda 21 |
| **Experiences in Social Responsibility** | Universidad Pública de Navarra | Social responsibility policy in the strategic plan 2011-2014 |
| | Universidad de Cádiz | University social responsibility report |
| **Experiences in environmental impact assessment of university activities** | Universidad de León | Ecological footprint of the campus |
| | Universidad de Salamanca | The ecological footprint of the campus: Pilot project in the Science Campus and Methodological Guide |

*Table 3: Spanish universities' sustainable initiatives.*

Source: (Benayas, J., 2010) and adapted by the author.

This brings us to the overall vision of Spanish campus environmental actions, which provide the best practices for campus operations and some other complementary areas. In this manner, to understand the importance of an assessment, it is a comprehensive exercise that must be institutionalized with the campus planning and maintenance departments, and furthermore, a global periodic campus environmental

sustainability check must be conducted (H. Alshuwaikhat, Abubakar, Aina, Adenle, & Umair, 2017).

## 2.5 Green Metrics

Sustainability culture has become a strong principle that values internal concern; it is an external key factor of the quality and image of the commitment of universities toward the improvement of the level of graduate skills and competencies. The contribution of a model institution includes environmental dimensions reflected in the international recognition of and references to positive performance, all of which are expressed through international rankings.

Therefore, Green Metrics University Ranking developed and managed by Universitas Indonesia could be interpreted as reference to better understand the current situation at Spanish university campus. It is a sustainable ranking system for universities with a focus on a uniform system that would be suitable for attracting the support of thousands of universities worldwide and allow rankings for a quick comparison on the criteria of their commitments to addressing sustainability and environmental issues. In 2018, 719 universities were ranked from over 76 countries.

Green Metrics aim to contribute to academic discourses on sustainability in education and the greening of campuses, promote university-led social change, and act as a tool for self-assessment on campus sustainability as well as informing governments, international and local environmental agents, and society about sustainability programs on campuses (UI Green Metrics, 2017).

**Table 9**
Users and stakeholders for academic and sustainability rankings.

| Characteristics | Academic ranking[a] | Sustainability ranking |
|---|---|---|
| Goals | Information provision | Information provision |
| Benefits claimed | Information for meritocracy, transparency for decision making, healthy competition, fair promotion, stimulating efforts to improve | Awareness raising, impetus for forging partnerships, motivation for change, fair promotion (getting 'on the map') |
| Stakeholders | Media, research institute | Parent institution of the ranking |
| Users | Parents, students, HEIs, enterprise, government | HEIs, governments, enterprises, NGOs and the public |
| Indicators | Research, teaching, reputation, internationalization | Setting & infrastructure, energy, climate change, water, waste, transport |

[a] Adapted from Shin (2011).

*Table 4: Users and stakeholders for academic and sustainability rankings.*
Source: (Lauder, Sari, Suwartha, & Tjahjono, 2015).

Regarding the use and benefits of the UI Green Metrics rankings according to the organizers (2017), they involve factors of idealism, internationalization, and recognition of universities' efforts and increasing of awareness on sustainability issues to encourage real change and develop a network for sharing best practices. Meanwhile, for Lauder et al., (2015) the ranking can be extremely influential to stakeholders such as governments, professional organizations, private companies, and consumers in the context of universities. Table 4 shows the relationship between academic and sustainability rankings and stakeholders.

*UI Green Metric World University Ranking model*

This model was not based on any existing ranking system; however, it was developed taking into account the Holcim Sustainability Award, GREENSHIP (Green Building Council of Indonesia), which was based on Leadership in Energy and Environmental Design (LEED); the Sustainability, Tracking, Assessment, and Rating System (STARS); and the College Sustainability Report Card (Green Report Card). The model includes three elements, as shown in Fig. 10

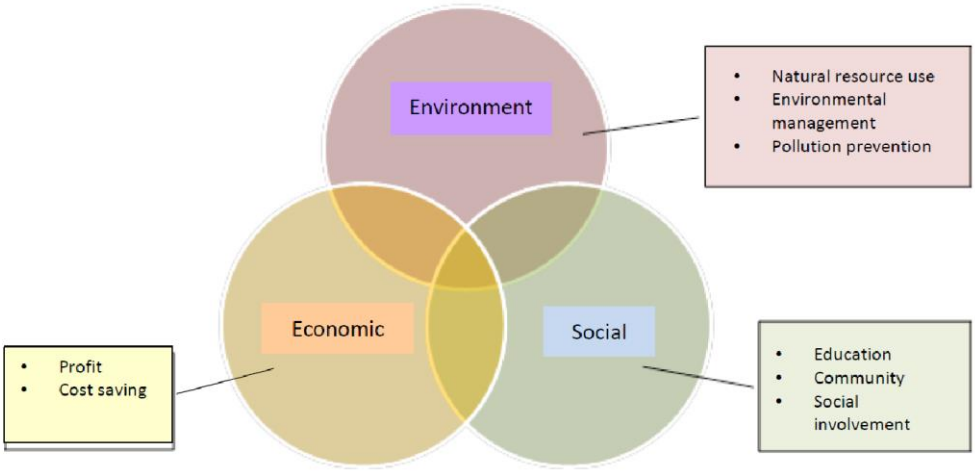


*Figure 10: UI Green Metric Model.*

Source: (UI Greenmetric, 2017).

The criteria in 2017 were Setting and Infrastructure, Energy and Climate Change, Waste, Water, Transportation, and Education. Every category has indicators that are scored based on the minimum and maximum numbers from participants; hence, the score of these categories and/or indicators can only be calculated after all universities have submitted their data. The table below shows the categories and their weighting.

| No | Category | Percentage of Total Points (%) |
|---|---|---|
| 1 | Setting and Infrastructure (SI) | 15 |
| 2 | Energy and Climate Change (EC) | 21 |
| 3 | Waste (WS) | 18 |
| 4 | Water (WR) | 10 |
| 5 | Transportation (TR) | 18 |
| 6 | Education (ED) | 18 |
| | **TOTAL** | **100** |

*Table 5: Categories used in the ranking and their weighting.*

Source: (UI Greenmetric, 2017).

The participation of Spanish universities in UI Green Metrics has been increasing. Table 6 presents a summary of the overall ranking parameters toward a position in the

global ranking; every institution contributes to different categories according to their expertise and governances to improve a specific area in the university, considering each one's reality and context.

| | | Ranking | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Nº** | **University** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** |
| 1 | Universitat Autonoma de Barcelona | 21 | 88 | 126 | 45 | 20 | 14 | 50 | 37 |
| 2 | Universidad de Alcala | 31 | 31 | 12 | 28 | 37 | 26 | 16 | 16 |
| 3 | Universitat de Valéncia | 76 | 127 | 179 | 171 | 152 | 28 | 178 | 102 |
| 4 | Universidad Autonoma de Madrid | | | 24 | 34 | 62 | 47 | 91 | 55 |
| 5 | Universitat de Barcelona | | | 90 | 111 | 112 | 59 | 180 | 126 |
| 6 | Universidad de Oviedo | | | | 124 | 86 | 72 | 112 | 75 |
| 7 | Universidad Rey Juan Carlos | | | | 213 | 148 | 78 | 82 | 84 |
| 8 | Universitat Jaume I de Castellon | | | 95 | 102 | 99 | 79 | 141 | 154 |
| 9 | Universitat de Girona | | | | | | 96 | 109 | 105 |
| 10 | Universidad Politecnica de Valencia | 47 | 39 | 45 | 64 | 64 | 118 | 104 | 87 |
| 11 | Universidad de Castilla la Mancha | | | | 210 | 174 | 127 | 273 | 239 |
| 12 | Universidad de Navarra | 145 | 135 | 187 | 250 | | 132 | 130 | 103 |
| 13 | Universidad da Coruna | | | | | | 149 | 87 | 93 |
| 14 | Universidad de Valladolid | | | | 190 | 289 | 218 | 157 | 199 |
| 15 | Universidad de Salamanca | | | | 282 | 203 | 230 | 359 | 368 |
| 16 | Universida de Santiago de Compostela | 125 | 95 | 96 | 150 | 210 | 234 | 283 | 268 |
| 17 | Universidad de Las Palmas de Gran Canaria | | | 176 | 228 | 245 | 247 | 237 | 223 |
| 18 | Universidad de Granada | | | | 295 | 237 | 248 | 417 | 301 |
| 19 | Universitat Rovira i Virgili | | | 233 | 271 | 259 | 255 | 188 | 119 |
| 20 | Universidad Miguel Hernandez | | | | | 239 | 260 | 124 | 123 |
| 21 | Universidad de Alicante | | | | | | 262 | 330 | 391 |
| 22 | Universidad de Zaragoza | | | | 90 | 126 | 263 | 310 | 298 |
| 23 | Universidad de Vigo | | | | | | 321 | 118 | 117 |
| 24 | Universitat de les Illes Balears | | | | 336 | 373 | 418 | 466 | 545 |
| 25 | Universidad de La Laguna | | | 192 | 257 | 298 | 425 | 529 | 511 |
| 26 | Universidad de Jaen | 146 | 169 | 230 | 273 | 311 | 465 | 267 | 201 |
| 27 | Universidad Politécnica de Cataluña BarcelonaTech | 18 | 81 | 110 | | | | | |
| 28 | Universitat de Vic –Universitat Central de Catalunya | | | | | | | 236 | 232 |
| 29 | Universidad Pontificia de Comillas | | | | | | | 335 | 290 |

*Table 6: UI Green Metrics Overall Ranking of Spanish universities 2011–2018*

Source: Adapted from (Alba-Hidalgo, 2015).

In general, the main theoretical premise of the first part of this chapter highlighted a global concern for a better world, in which higher education plays a strategic role in achieving this challenge, through education, research, and community outreach. Some universities have become pioneers for implementing sustainable initiatives (e.g., a Sustainable Campus, Green Campus, or Eco-Campus) as a way to consolidate the universities' community lifestyle aligned to a sustainable environment, aimed at being a key driver in local, national, or international communities, and in some cases acting as a role model for small or medium-sized districts. In the second part of this chapter, I encourage the participation of stakeholders in the management model of sustainable universities, introducing the theory, concepts, and multidisciplinary application. Essentially, this is the stakeholder management approach for creating value and integrating their perception toward a potential contribution to the Spanish university system.

## Part II – Stakeholder Management in Universities

### 2.6 Stakeholder Management Theory

Stakeholder theory originated as a way to understand how companies and their people are articulated through the mission of the firm, as well as the interests of the different groups of directly or indirectly linked people. The stakeholder approach began in the mid-1980s, when R. Edward Freeman defined the term as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 46).

This theory acknowledges the importance of managers' time and attention on these groups of individuals who could contribute to the values the firm creates. Thus, to explain the core insights of stakeholder theory and use it to create outstanding businesses, Freeman, Harrison, and Zyglidopoulos, (2018) introduced three main interconnected problems in business*: "The problem of value creation and trade; The problem of the ethics of capitalism; and The problem of managerial mindset"* (p.405). These problems are interpreted as an approach to rethink the needs of a broad group of stakeholders and the relationship with how managers do business. The focus of theorizing stakeholder legitimacy consists of primary organizational stakeholders such as employees and managers, customers, suppliers, and the firm's owners (i.e., shareholders, partners, and members). Furthermore, it includes secondary stakeholders, who have no formal claim to the organization or do not contribute as directly to its value-creation processes (Freeman et al., 2007, 2018)

### 2.6.1 Stakeholder Management: Definition

The core concepts of stakeholder management establish a foundation of understanding on the meaning of the term "stakeholder" and the legitimate definition of a group that the firm needs to exist (Freeman et al., 2007, 2018; Friedman & Miles, 2006). The literature on this basis describes accuracy, instrumental power, and normative validity. Hence, there are seven main concepts to describe the elements that build stakeholder management.

*A Managerial Focus*: A "win-win-win-win-win relationship," a practice that executives manage stakeholders with and how those stakeholders are managed to influence the value a business firm creates or destroys (Freeman et al., 2018).

*A Moral Foundation*: "Includes respect for humans and their basic rights, integrity, fairness, honesty, loyalty, freedom to choose, and assumption of responsibility for the consequences of the actions a firm takes" (Freeman, Harrison, Wicks, Parmar, & De Colle, 2010) as cited in (Freeman et al. 2018 p.3).

*An Overarching Purpose (Enterprise Strategy):* Predominant stakeholder culture represents "an opportunity for a firm to differentiate itself from competitors and other firms in terms of a firm's enterprise strategy" Freeman et al. (2018 p.4).

*Creation of Both Economic and Noneconomic Value:* "Stakeholders look at the whole package of what they get from a firm if it is willing to provide just enough value to keep them engaged with it" (Harrison, Bosse, & Phillips, 2010) as cited in Freeman et al. (2018).

*Reciprocity:* Opportunity costs, potential economic benefits from additional investments of resources in stakeholders, encouraging contributions and engagement from them to the firm (Freeman et al. 2018).

*Reputation:* This factor can influence how attractive the firm is to both existing and potential future stakeholders; a stakeholder-oriented organization is a much more attractive prospect relative to other companies that do not have such a reputation (Ibid).

*Stakeholder Interests Converge Over Time:* A synergy of looking for solutions that minimize or eliminate losses of value to each of their stakeholders (Ibid).

### 2.6.2 Application to Other Areas of Organizational Management

The theory introduces knowledge that offers a connection to different areas in an organization and the role of agents to create more value through the activities. One of the most relevant areas closely related is *Corporate Social Responsibility (CSR),* the

obligations of firms to include more than financial considerations, also deemed the "social" side of business (Freeman et al., 2010). Furthermore, stakeholder theory aims to connect a concern for moral conduct with the process of value creation. Thus, in *Strategic Management*, stakeholder utility functions and higher levels of innovation increase the capacity to deal with unexpected events (Harrison et al., 2010), developing strategies that lead to valuable information being provided by these potential groups.

Some concepts of this theory have been used to better understand the relationship between governance and accounting practices. *Finance* scholars have barely tapped the potential of the stakeholder perspective in improving financial decisions and outcomes (Harrison et al., 2010). Thus, stakeholder perspectives increase the *accountability* of an organization to a broader group of stakeholders (Freeman et al., 2010).

In this connection, stakeholder concept orientates behavioral areas as part of the *management*, gaps between managers and activist group members, and seeking cooperation among them. In conclusion, stakeholder management theory provides the advantage of exploring multiple factors and utility functions across an organization, being mutually complementary, because they offer a knowledge base to introduce to the management system for competitive benefits; this is a manage-for-stakeholders approach built with normative and instrumental views for organizations.

### 2.6.3 Why Are Stakeholders Important?

Regarding the role of stakeholders in dynamic organizations, Freeman et al. (2018) suggested stakeholder-oriented management facilitates managers' enhanced performance in four crucial and highly interconnected activities:

> (1) Creating value, especially in dynamic markets; (2) innovating; (3) dealing with the inclusivity and interconnectedness of various relevant groups and individuals; and (4) better addressing ethical issues. These activities are critical, not only (and especially) for the long-term survival and success of business firms but also for the contributions they make to society (Freeman et al. 2018 p. 10).

*Creating value:* To create value, Harrison et al. (2010) explained the advantage of stakeholder knowledge as allowing the firm to better predict vital trends for understanding the dynamics in the future and establishing value-creation strategies. This creates a close relationship with stakeholders to encourage them to provide valuable information, expertise, and insights to see the world through the eyes of the multiple groups of individuals. Creating value for stakeholders is about understanding and satisfying their need and concerns (Freeman et al., 2007).

*Innovation:* The ability to deal with unexpected changes in the environment, leading to increased utility in a creative and envisioning process, where stakeholders participate in the transfer of knowledge and "gain acceptance from them when the new product, service, or process is introduced" (Freeman et al. 2018, p.11).

*Inclusivity and Interconnectedness:* This approach acknowledges the inclusion of multiple stakeholders, developing the capabilities necessary to deal with such diverse groups and interconnect among them (Freeman et al. 2018).

*Ethical Issues:* Ethics and values are the core of management for stakeholders (Freeman et al., 2007). They describe a comprehensive and inclusive view of their firm's overall obligations in society (Freeman et al., 2010) and involve "long-term value creation and avoidance of unethical behavior that can hinder the sustainability of the

firm's mission. In short, the answer to the question "Why a stakeholder approach?" is "because it works better for all."" (Freeman et al. 2018, p.15).

In this regard, the stakeholder approach makes a direct contribution to the democratic process of university management, where representatives of various actors of the university community can potentially influence more balanced participation and consideration for achieving a strategic plan based on a sustainable development mission.

### 2.6.4 Mapping Stakeholders

Those groups and individuals who can affect the achievement of an organization's purpose must be identified at the generic level. In the basic framework of Freeman et al. (2007, 2018) shown in Fig. 11, "primary and secondary stakeholders do not have clear boundaries, and even the boundary between primary and secondary stakeholders is semipermeable" (Freeman et al. 2018, p.16). "Primary stakeholders are directly involved in the value-creation processes of the firm" (Ibid), not only economic but also partners and a strong influence on firm decisions. However, "secondary stakeholders are not engaged directly in value-creation processes, but they do have a legitimate interest in what the firm does. They may well influence and affect the interests of primary stakeholders" (Freeman et al. 2018, p.17). However, some factors must be considered in the mapping process. The first implication is that some stakeholders could play multiple roles, which is called a "stakeholder role set." The second implication is the interconnection of stakeholder groups. Thus, these connotations, stakeholder maps, stake, and roles must be nuanced by a close analysis of each organization, defining the level at "which strategies are established for managing those stakeholders in the value-creation process" (Ibid).

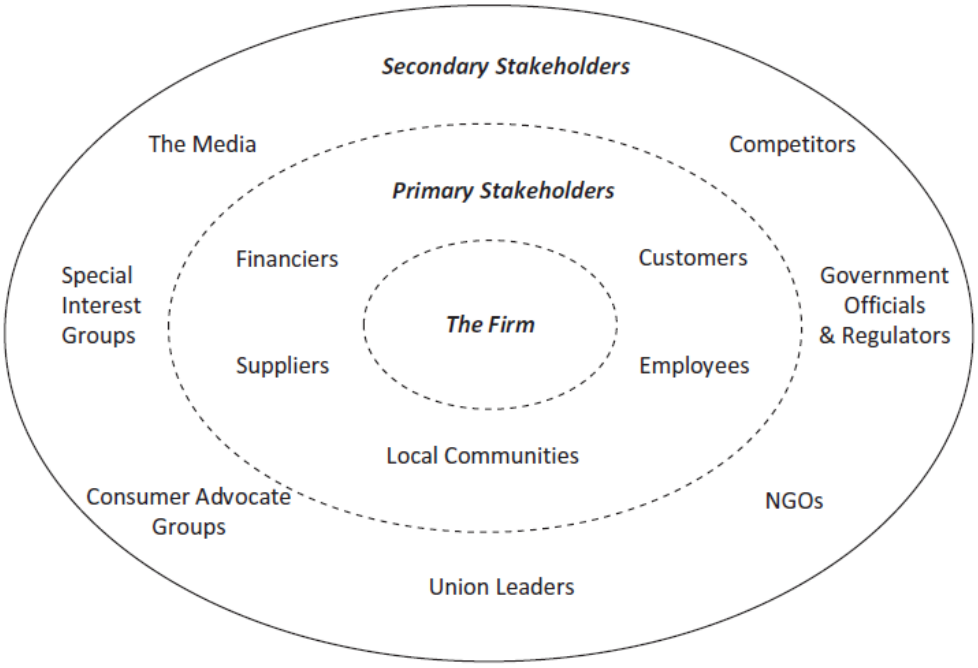


*Figure 11: A basic stakeholder map.*

Source: (Freeman et al., 2018).

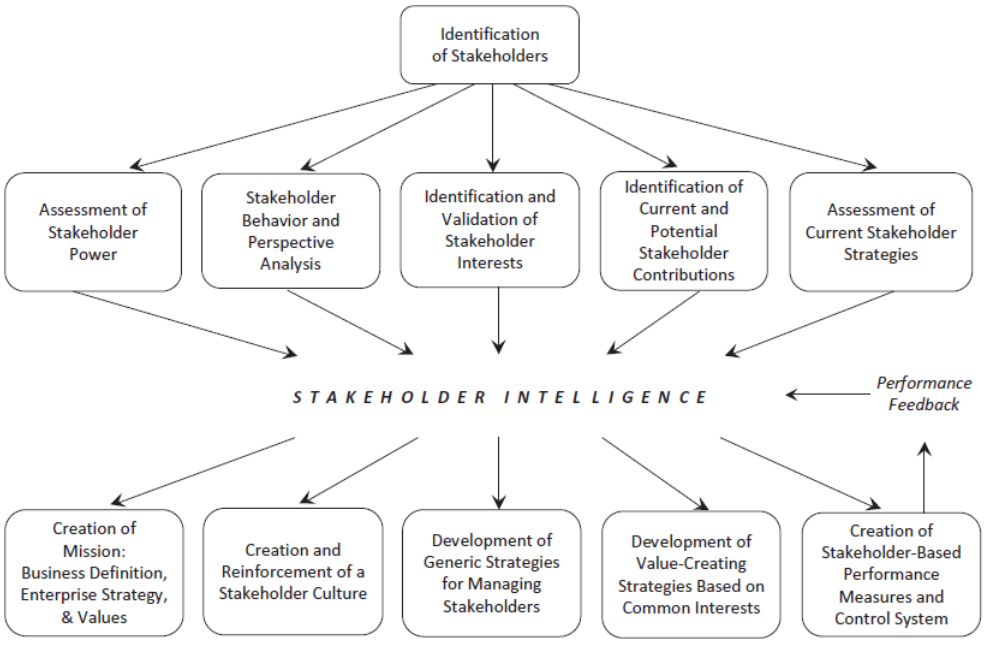


*Figure 12: Stakeholder intelligence and stakeholder management.*

Source: (Freeman et al., 2018).

### 2.6.5 Managing for Stakeholders and Strategies for Creating Value

Some practical techniques are effective for creating value for stakeholders; the main aim is to give the organization an increased capability to manage stakeholders. Freeman et al. (2007, 2018) explained how these approaches provide a better relationship with stakeholders and give the firm a competitive edge (Fig. 12), referred to as "stakeholder intelligence." The techniques are: (1) Assessment of Stakeholder Power, (2) Stakeholder Behavior and Perspective Analysis, (3) Current and Potential Stakeholder Contributions, (4) Assessment of Current Stakeholder Strategies, and (5) Managing Stakeholder Intelligence. These are described as follows.

*Assessment of Stakeholder Power:* This strategic thinking can be yielded with underlying activities of the company and their impact on stakeholders. Therefore, power means the capacity of these groups to influence the outcomes of a companies' decisions and strategies. This task includes (i) stating the corporate mission, (ii) identifying stakeholder interests, (iii) identifying corporate strategies for stakeholders, and (iv) conducting validation with stakeholders.

*Stakeholder Behavior and Perspective Analysis:* How can changes (or potential changes) in stakeholders behavior help an organization to create value or harm the company? First, stakeholder behavior is segmented into three categories. The first, current behavior, refers to existing strategies for dealing with the current state of the relationship between the organization and stakeholders' issues. The second category, cooperative potential, lays out all possible options for what stakeholders could do better to be more helpful to the business. The third category, competitive threat, refers to potentially harmful or threatening behavior to prevent or reduce the amount of value an organization creates.

The purpose of understanding stakeholders in greater depth makes the firm more effective (Freeman et al., 2007, 2018). The following questions introduced by Freeman, call attention to the contribution of this approach in organizations.

1. What are this stakeholder's main interests? How do we affect these interests? How are we affected by these interests?

2. Who are the groups and individuals who can affect this stakeholder? Who are the stakeholder's stakeholders? Moreover, what is the stake (interest) of each?

3. What do the members of this group probably believe about us? What assumptions are they making? What assumptions do we make about them?

4. What are the natural coalitions that could occur? Where are the joint interests? What do the stakeholder and we have in common? What are the major points of conflict?

5. What might cause a stakeholder to engage in behavior that is more cooperative? More harmful? (Freeman et al. 2018, p.41)

Once the company has gathered these concerns, a validation of interest can be conducted in a second stage; this will provide some guidance in the strategic process of addressing solutions for these views.

*Current and Potential Stakeholder Contributions:* Recognizing behavior and interests for a "greater understanding of each stakeholder and an appreciation of what they already provide for the firm" (Freeman et al. 2018, p.44).

*Assessment of Current Stakeholder Strategies:* The authors defined the following common interactions between firms and stakeholders: "(1) ignore stakeholders; (2) the public relation approach; (3) implicit negotiations; and (4) engagement, dialog, and

negotiation" (Freeman et al. 2018, p.45). The theory translates the multiple ways to develop programs where managers are responsible for interactions with stakeholders and must be a constant cycle of "win-win" solutions.

*Managing Stakeholder Intelligence:* This is a common learning process among the organization and stakeholders, which should be constantly gathered, recorded, and organized in ways that could be useful to decision-makers and other firm members. This information should be discussed and learned to be considered crucial information for the design of new value-creating strategies. However, the "collection and dissemination of stakeholder intelligence should be widespread across the firm" (Freeman et al. 2018, p.48), warranting effective information security procedures (Friedman & Miles, 2006). Brenner (1995) presented empirical evidence using a method survey of stakeholder engagement (face-to-face interviews, focus groups, surveys, meetings, and the publication of corporate social reports). It explained the importance of recognizing the relevance of a diverse set of stakeholders; incorporating stakeholder values, interests, or needs; and drawing upon economic, legal, or moral critical and balanced stakeholder interests. In summary, a stakeholder analysis provides a systematic basis for a better relationship between actors and the organization, for shaping successful strategies, meeting realistic goals, and being able to answer exigencies of a changing environment.

## 2.7 Stakeholder Approach in Sustainable Environmental Management at Universities

In this context, HEIs are also firms, companies, or organizations wherein the relationship between stakeholders and managers or leaders is a step for implementing a superior method of achieving the main mission of universities. In particular, the terms

stakeholder and university or higher education are often yielded with engagement, which has a connection with the role and elements introduced by Freeman et al. in their contribution to stakeholder theory. Ferrero-Ferrero, Fernández-Izquierdo, Muñoz-Torres, and Bellés-Colomer (2018) claimed special relevance existed in HEIs because of their social mission and public role.

From this perspective, the stakeholder management approach is connected to the mission of universities and stakeholder expectations, and simultaneously, people can attempt to manage their interactions with the natural environment using stakeholder management processes as evidenced by environmental audits and impact statements (Friedman & Miles, 2006; Starik, M, 1994).

Hence, identifying key stakeholders in HEI and understanding their participation in a sustainable environment are priorities for promoting an active role, a model of ownership, and utilizing it in the organizational strategic planning process (Zaini, Pavlov, Saeed, Radzicki, & Hoffman, 2017).

### 2.7.1 HEIs' Key Stakeholders

Focusing on the categorization of individual and collective groups of HEIs, the second draft of the People's Sustainability Treaty on Higher Education (Rio +20 UN Conference on Sustainable Development, 2012; Fig. 1) divided higher education stakeholders into three broad categories:

> (1) Those engaged in the activities of HEIs: executive, academic managers, educators, researchers, and students. (2) Those engaged in the higher education system: administrative officers, ministries, assessment bodies, and international organizations. (3) Those forming part of the communities that the

higher education system serves: these include local communities, professional bodies, and companies.

Another essential point is the needs and advantages of articulating HEIs to a variety of stakeholders, which provides useful information about actions, objectives, and motivations, depending on specific groups. Indeed, Cortese (2003, p. 22) specified these groups in "internal decision-makers, stakeholders (e.g., faculty, operational personnel, students) and external stakeholders (e.g., parents, alumni, local and regional communities, future employers, funders of education and research, and accreditation organizations)," as well as identifying those external groups who are strategically important, such as generic stakeholders (general society). Stakeholders from outside of academia help to integrate SD more effectively than if only inside academic inputs were used (Rodrigo Lozano, Lozano, Mulder, Huisingh, & Waas, 2013).

"Studying stakeholders' ESD perceptions and attitudes is critical for fostering sustainable practices on campuses (Earl, Lawrence, Harris, & Stiller, 2003), and has the potential to reduce the gap between what is being done and what is perceived to be done" (Watson, Lozano, Noyes, & Rodgers, 2013, p.108). To classify these groups of agents, Jongbloed, Enders, and Salerno (2008) suggested strategic categories of HEI stakeholders as internal or external, individual or collective, and academic or non-academic (Table 7).

| Stakeholder category | Constitutive groups, communities, stakeholders, clients, etc. |
|---|---|
| Governing entities | State & federal government; governing board; board of trustees, buffer organisations; sponsoring religious organisations |
| Administration | President (vice-chancellor); senior administrators |
| Employees | Faculty; administrative staff; support staff |
| Clienteles | Students; parents/spouses; tuition reimbursement providers; service partners; employers; field placement sites |
| Suppliers | Secondary education providers; alumni; other colleges and universities; food purveyors; insurance companies; utilities; contracted services |
| Competitors | *Direct*: private and public providers of post-secondary education |
| | *Potential*: distance providers; new ventures |
| | *Substitutes*: employer-sponsored training programmes |
| Donors | Individuals (including trustees, friends, parents, alumni, employees, industry, research councils, foundations) |
| Communities | Neighbours; school systems; social services; chambers of commerce; special interest group |
| Government regulators | Ministry of Education; buffer organisations; state & federal financial aid agencies; research councils; federal research support; tax authorities; social security; Patent Office |
| Non-governmental regulators | Foundations; institutional and programmatic accrediting bodies; professional associations; church sponsors |
| Financial intermediaries | Banks; fund managers; analysts |
| Joint venture partners | Alliances & consortia; corporate co-sponsors of research and educational services |

*Table 7: Stakeholder categories and constitutive groups.*
Source: (Jongbloed et al., 2008).

After identifying the stakeholders' links to universities and concerning the importance of universities and their role in society, the Graz Declaration on Committing Universities to Sustainable Development stated that "As significant societal actors, universities shape their local, regional and national environs existing, therefore an important partner of other stakeholders, and society at large, for a sustainable future" place COPERNICUS-CAMPUS, Karl-Franzens-University Graz, Technical University Graz, and Oikos International, (2005, para. 3). This brings to the attention and participation of the engaged to be involved in the decision-making process, management, sharing of information, dialogs, and creation of a model of shared responsibilities.

The skills and expertise of all groups should be incorporated and their various decision-making and communication structures bridged, ranging from horizontal, autonomous, and democratic to vertical and hierarchical; this enables the accomplishment

of open innovation during a strategy process (Clarke & Kouri, 2009; Ministry of Education, 2011).

There are also considerations of the articulation of stakeholders and university activities, defined as semi-open (or semi-closed) systems, where diverse resources and human capital enter the system (e.g., staff and students, food for cafeterias, and energy and water used), as well as resources and human capital that have evolved within the universities, which exit the system (e.g., educated students, faculty, staff, emissions, effluents, and wasted energy). Additionally, there are resources that stay in the system (e.g., the buildings, laboratories, and organizational routines and behaviors) as semi-open systems, due to these universities having the responsibility to engage with internal operations and interact with different stakeholders (social and environmental) outside of their physical boundaries (Rodrigo Lozano, Lozano, et al., 2013).

The sustainability practices within the academic setting must be understood and practiced by all members of the organization at various levels; only then can a collective force for achieving the sustainability mission be mobilized successfully (Nejati & Nejati, 2013). “Universities should be active at the interface between the local and the global community: addressing local sustainability issues but also using its global tentacles and networks to take advantage of perspectives and expertise grounded in contexts elsewhere” (Wals, 2014, p. 14).

Most likely, stakeholder pressure will be required to increase the adoption of sustainable actions, awareness to the reality of local issues, and global problems, such as the ongoing worldwide financial crisis, economic development, climate change, and other sustainability concerns; thus, active encouragement to internal and external agents

commitment to sustainable activities should be prioritized in universities' agendas as a way for them to achieve SD and benefit society (M. del M. Alonso-Almeida et al., 2015).

### 2.7.2 Perceptions

To understand social facts related to the term "perception," it is critical to know that human behavior is primarily driven by perception and not facts; most cognitive psychologists believe that perceptions are formed by common sense reasoning, personal experience, social communication, and cultural traditions (Sellke & Renn, 2010).

Bi, Zhang, and Zhang (2010; pp. 361–362) considered the interconnections among environmental factors and human dimensions through "a perception study focused on the human-environment relationship, in which individual and collective understanding of the environment is seen as a major force in shaping the environment through human choices and behaviors," while valuable orientations are indeed crucial for interpreting the environmental concerns of stakeholders.

Researchers have conducted a significant number of studies on the perceptions, opinions, and thoughts of different targets on sustainability topics. Furthermore, yet less prevalent, research has been conducted on environmental perceptions in Spanish universities, particularly groups of student representatives on the board of universities' governments and Social Councils as key actors through the policy-making process and representation of the general society inside of the university. Finally, the diverse agendas covered by national newspapers based on sustainability and higher education constitute a public concern. The following table captures similar studies on perceptions about a sustainable environment from different actors of the HE system; most are in an international context and a few are from Spain.

| Authors and year | Title | Studied group | Contribution |
|---|---|---|---|
| **(Biasutti & Frate, 2017)** | A validity and reliability study of the Attitudes toward Sustainable Development scale | 484 undergraduate students from an Italian university | The main dimensions identified were the environment, economy, society, and education, as well as agricultural students who had a greater pro-environmental attitude, whereas psychology students were more oriented toward social issues. |
| **(Fabbrizzi, Maggino, Marinelli, Menghini, & Ricci, 2016)** | Sustainability and Wellbeing: The Perception of Younger Generations and Their Expectations | 200 high school students in Tuscany | The study has shown how, substantially, young people do not hear about sustainability very much, especially in school, the place that scientific literature considers crucial for education for sustainable development. |
| **(Novo-Corti, Pociovalisteanu, & Iorgulescu, 2015)** | Social Sustainability in Higher Education: The Role of Institutions from Students' Point of view | Economics and business students at two universities (in Spain and Romania) | The importance of universities as institutions engaged in social sustainability through support for people with disabilities. Furthermore, evidence was acquired that Spanish students believed the role of teachers in that university to be more important for social sustainability than the role of students, whereas the Romanian students valued the role of students more. |
| **(Christie, Miller, Cooke, & White, 2015)** | Environmental sustainability in higher education: What do academics think? | 6% of the entire university teaching workforce of Australia, 1819 academics participated (26% response rate) | The majority of teaching academics in Australia should support the inclusion of Education for Sustainability (EfS) in universities for all students. EfS is, at times, understood by academics as indirectly relevant to their teaching |
| **(Bantanur, 2015)** | Sustainability perceptions in a technological institution of higher education | 165 students, focused on environmental, educational and research, and | Operational parameters of environmental factors were considered more important. Education and research were given less importance |

| Authors and year | Title | Studied group | Contribution |
|---|---|---|---|
| | in India | management factors. | compared with environmental and management factors. Furthermore, students suggested a few innovative ideas such as "green police," changes in personal attitudes, green living, the 3Rs, and development guidelines. |
| **(Angeles Ull, Pilar Martinez-Agut, Pinero, & Aznar Minguet, 2014)** | Perceptions and Attitudes of Students of Teacher-Training Toward Environment and Sustainability | 922 students of Universities of Comunidad Valenciana, Spain | The majority of respondents were not aware of the impact of their daily activities on the environment. Regarding the introduction of sustainability in teaching, 75.9% of students said that it is an appropriate measure. Almost half of the surveyed answered that they had not received enough training in their qualifications to deal with environmental problems in the future. |
| **(Zeegers & Clark, 2014)** | Students' perceptions of education for sustainable development | 34 students from the first semester of the seminar in sustainability in the Master of Environmental Management and Sustainability at the University of South Australia | The key to offering a balanced perspective to sustainability was to use an approach to learning that focused on student engagement, interaction with topics, and reflections on learning. It also suggested that while a focused approach in a single course was effective at changing students' perceptions of sustainability, long-term change is likely to be more effective if it is addressed across the curriculum. |
| **(Watson et al., 2013)** | Assessing curricula contribution to sustainability more holistically: Experiences from the integration of curricula | Two student perception surveys from the School of Civil and Environmental Engineering at Georgia Tech | "The results of the STAUNCH and student surveys indicated that the main focus was on the environmental dimension, not the economic and social dimensions" (Watson et al., 2013, p.114). Furthermore, student perception surveys can be useful for curricula |

| Authors and year | Title | Studied group | Contribution |
|---|---|---|---|
| | assessment and students' perceptions at the Georgia Institute of Technology | | assessments. |
| **(Abd Razak, Utaberta, Abdullah, Tahir, & Ani, 2011)** | Sustainable Campus Design in Malaysia: An Evaluation of Student's Perception of Four Research University Campuses | 100 students for each campus on the public university in Malaysia and limited to only campus physical planning | Weaknesses in physical development plans of studied campuses. Development plans using a wide area and placing the location of the buildings far apart had a large impact on the campus accessibility and circulatory system. Development of a large area is difficult for universities to provide facilities such as covered walkways, bicycle paths, optimal lighting, and landscaping in a controlled setting throughout the campus. This proves that a compact campus is more practical for one that aims to create a sustainable life. |

*Table 8: Literature review of sustainable environment perceptions in different contexts.*

Note: Elaborated by the author.

The summary presented in Table 8 provides an overview of many approaches to sustainable environmental development corresponding to the important concerns explored through providing a bridge between the activities being conducted at universities to what students, academic faculty, and other stakeholders perceive to be achieved (Watson et al., 2013). However, a gap in the literature exists in terms of local contexts that involve the perceptions of student leaders, Social Councils, academic experts, and environmental managers.

## 2.8 Correlation of Media Toward Sustainability

The role of the media was highlighted by Friedman and Miles (2006) as being the flow of information and material resources between organizations and actors; this could be a double-edged sword. Therefore, the media has been used to obtaining stakeholder messages over other stakeholders. The media emerge as an intermediary of public opinion to be formed.

There is a strong connection between the relevance of communication as a special factor of motivation to facilitate sustainability, as well as a link to the opinion of all agents that belong to universities, which are a commitment to real change to improve the environment and society's engagement. UNESCO (1997) emphasized the great potential of new information systems including media, which should be used properly to sensitize and incited to mobilize its know-how, as well as distribution channels to diffuse strategic messages while helping to translate the complexity of the issues into meaningful and understandable information for the general society toward sustainability challenges.

In addition, the UN's Decade of Education for Sustainable Development included mobilizing the media in its vision, representing a powerful means of awareness-raising and dissemination of the principles and values of SD, as well as about promising experiences. Making the media an ally for transmitting quality information to citizens is a pledge of success for the future (UNESCO, 2005).

According to Bonfadelli (2010), regarding the point of view of journalists, media's selection of topics does significantly influence audiences' perception of the world; this is a long-term cognitive media effect. In his research, the author presented some of the results from media publications, where 3.4 articles per issue mentioned the

topic of sustainability. In an elite newspaper's second publication, 1.5 articles appeared in one issue of "Tages-Anseiger" from the German-speaking part of Switzerland. In fact, politicians and political institutions dominated sustainability discourse in both cases, sharing almost 50% of the coverage.

However, media attention is more oriented toward becoming an effective communication strategy that encourages greater SD of society. Based on the findings of this study, it refers to the importance of quality information as a necessary prerequisite for more sensitive attitudes and more commitment behaviors toward sustainable-environment development.

Therefore, it is of crucial relevance to consider perceptions of media salience of sustainability and higher education topics; thus, the present study was conducted to analyze the trends of newspaper coverage in Spain and their evolution during recent years, reflecting the general society's perception. Figure 13 shows the evolution through the time-frequency of articles related to the environment, although it is a small example of the relevance of this topic between those years back in time.

Overall, the media coverage can represent a significant correlation between the levels of socioeconomic development and levels of media coverage on a specific issue, which may identify the most important drivers of sustainability, as Barkemeyer, Figge, and Holt (2013) concluded in their study of 115 leading national newspapers in 41 countries addressing sustainability topics. Part of this study also included Spain, where for 2008 the topics that ranked highly were human rights, corruption, discrimination, climate change, poverty, and others, just as an example of the media's agenda of the most important newspapers of the country.


*Figure 13: Number of environment articles published in the newspaper "El País."*
Source: (Benayas, Gutiérrez, & Hernández, 2003).

In addition, sustainability communication is a crucial contribution toward understanding the role the media has in engaging the public with this topic; it also has a vital dual role in setting agendas and transmitting information, promoting the attention, awareness, and knowledge of environmental and social issues in our societies (Holt and Barkemeyer, 2012). Holt and Barkemeyer explored climate change and sustainability data of 112 worldwide newspapers, and suggested an issue–attention cycle (Fig.14) and a punctuated equilibrium model (Fig. 15). Both appeared to influence the trends emerging within the data; this was linked to the punctuated timing shift of critical events during the years analyzed.

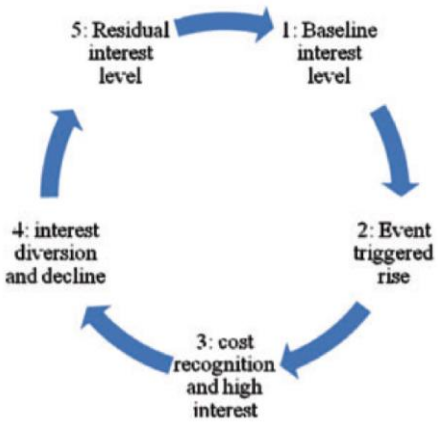


*Figure 14: The cyclical issue–attention cycle process.*

Source: (Holt & Barkemeyer, 2012) based on Downs (1972).


*Figure 15: Representation of punctuated equilibrium in organizational and environmental policy research.*

Source: (Holt & Barkemeyer, 2012).

Thus, these models seem to strongly influence public attitudes and behaviors concerning the most crucial domestic problems, which also generate enough political pressure to cause effective change (Downs, 1972). Therefore, this thesis seeks a social dialog that incorporates public opinions about sustainable issues on higher education campus as well as their correlation with newspaper agendas, reaching mainstream public awareness and perception.

Sustainability in universities' discourse are also an integration of community participation, opening a space for transdisciplinary collaboration from a wide range of

disciplines and stakeholders beyond academic opinion, as well as addressing diverse public audiences. Hence, those discourses can affect decision-making in particular contexts (Smith & Lindenfeld, 2014) about understanding discourses as a tool of legitimation regarding constructive effects and communicative actions (Rodriguez-Pomeda & Casani, 2016).

This consideration is revealed in the results of a survey to state legislators presented by Smith and Lindenfeld (2014), where 81% of respondents turned to newspapers when seeking information about scientific issues related to the university; thus, this example explains legislators receiving information from local newspapers; this informal interaction makes them pay attention to the patterns of newspapers. This study examined Spain with the aim of diving into the data of national newspapers and identifying main topics and other characteristics of the media that can influence the community, especially to picture the reality of public opinion.

## 2.9 Spanish Higher Education System

Since 2007, Spanish universities have had a boost to incorporate some elements for improving the quality of the Spanish Higher Education System. This new model contributes a different way of understanding the university and its relationship with society, as well as raising the role and responsibilities of all agents of the university's system, addressing global challenges and demands. To articulate these new changes in universities' governance, the General Conference on the University's Policy and the Council of universities was established.

Consequently, the same organic law included the participation of members of the university community in contributing to SD and respect for the environment.

Furthermore, it added the purpose of the research of the university's aim to aid SD (Official State Gazette num.89, 2007).

Subsequently, a new era of public management for universities began. Vilardel and Álvarez (2010) shared the case of Cataluña, which adopted a system to improve the quality of the university's activities and subsidies based on the results. This has forced them to introduce instruments of strategic planning and sustainable development concepts into their organizational values.

Given that, in 2010 Spain implemented a University Strategy, as a guideline to strengthen the role of higher education, in order to increase the social cohesion, and progress in the change of economic and social models towards a new sustainable model (Moreno Navarro, 2010). The perspective of EU 2015 address social responsibility and sustainable development of universities intensified in the local environment, bringing this to the internal management of the HEI; hence, the fields of universities' social responsibilities are linked to an ethical, sustainable development, cooperation to development and dissemination of the knowledge.

This initiative prompted the Spanish University System to foster sustainable challenges within Spanish society and confront the horizon of globalization based on the three missions of universities (teaching, research and knowledge transfer, and innovation); in addition, the Spanish government approved the implementation of the Sustainable Economy Law (Official State Gazette num. 55, 2011) as an essential part of the Strategy for a Sustainable Economy, which was approved by the Minister in November 2009 (Spanish Government, 2009). It incorporated 20 reforms into the environmental, economic, financial, and labor areas, with the main objective of renewing the model of Spanish economic growth to be sustainable.

Thus, these official documents are elements for boosting and accelerating the development of a competitive economic model, developed society, and new framework based on innovative R&D; they are aimed toward environmental sustainability, the sustainability of the energy model, the reduction of emissions from transport, and sustainable mobility.

In this context, one of the main areas of action proposed was to connect the environment from implementation to an international campus of excellence in a program of the same name to improve the competitiveness of Spanish university campuses and become international references with global standards to contribute to their particular areas of influence.

The International Campus of Excellence program was expected to create an "ecosystem of knowledge" to encourage employment, social cohesion, and economic development. Since 2008, the government has invested €590 million (Ministry of Education, 2017). One of the main objectives linked to sustainability was to create sustainable and healthy campuses.

In addition, in 1994, the CRUE established an association of 76 Spanish universities to act as the main spokesperson of universities through a central government that plays a key role in all normative development in higher education in Spain. In addition, it promotes initiatives to foster relationships with society as well as institutional relationships at the national and international levels (CRUE, 2017).

The group is called the Sectoral Committee on Environmental Quality, Sustainable Development, and Risk Prevention (CADEP in Spanish), and since 2007 it has been working on a systematic study of sustainable initiatives. Between 2010 and 2011 the group developed a field survey with 31 universities to identify a system of

indicators for measuring their progress and contribution to sustainability and social responsibility in a benchmark framework.

Later, the CRUE renamed CADEP as the Sustainability Group, which integrates an executive board and working groups each focusing on the following specific tasks: university sustainability assessments, environmental improvements to university buildings, participation and volunteering, prevention of occupational hazards, curriculum sustainability, university and sustainable mobility, healthy universities, university urban planning, and sustainability.

Regarding an overview of different Spanish cases presented in the scientific literature, some authors have shared theoretical premises that HEIs are willing to achieve toward sustainable environment actions. Additionally, the transformation of new strategies was adopted from Ferrer and Balas (2004), who described and discussed the strategies implemented of an environmental plan, including the link between an environmental research map and synergy through the initiatives toward an integral university plan at the Technical University of Catalonia in Barcelona.

Therefore, in terms of results of this stage of changes in the Spanish higher education system, the new challenges that the government and university boards would face were identified by Casani, Rodríguez, and Martín (2007) as part of a strategic challenge in the following four main elements: (1) setting objectives and a framework, (2) resource allocation, (3) conditions of the environment, (4) competitors, suggesting to adopt the stakeholders theory and social responsibility. The authors concluded that the implementation of a strategic change would first and foremost need planning, implementation, and monitoring tools to ensure reporting and accountability.

This last aspect integrates a mechanism for communicating the performance of HEIs to establish a relationship with stakeholders as a form of social responsibility and sustainability outreach. Furthermore, Abadía et al. (2012) studied the Spanish University Group G9 8U (Universidad de Cantabria, Castilla de la Mancha, Extremadura, Islas Baleares, La Rioja, Navarra, Oviedo, País Vasco y Zaragoza) and explained the factors of internal and external accountability, which are limited to economic, financial, and academic aspects, and in a few cases some environmental indicators. However, many institutions promote environmental activities than sometimes are not reflected in the data that can be reported and assessed. For this reason, developing an appropriate accountability report for encouraging sustainability awareness through the university communities is highly relevant.

Similarly, Vilardel and Álvarez (2010) proposed perspectives and experiences of a decade of management through objectives and a control system at the Universitat Autónoma de Barcelona, improving the culture of managing and productivity. Aznar Minguet, Martinez-Agut, Palacios, Piñero, and Ull (2011) reported on connecting this initiative of strategic planning to introduce values for fostering sustainability practices; they conducted a survey at the University of Valencia, and the results addressed curricula lines from different perspectives and interpretations depending on the area of expertise of the university teaching staff, which a significant proportion of respondents stated that they were willing to address sustainability topics in their programs. However, they agreed that their universities lacked sustainable actions, leadership roles, and promotion and encouragement of an environmental and sustainability culture; thus, these previous studies help to understand some of the barriers that Spanish universities are facing in their main mission of education.

Furthermore, a comparative study introduced similar factors applied from the previous study to three universities from the Comunidad Valenciana, where the majority of respondents were not aware of the impact of their daily activities on the environment (Angeles Ull et al., 2014). The authors found it crucial that universities disseminate their initiatives for students to become more involved in campus life, because they consider themselves to not have enough qualifications to deal with environmental problems in the future.

Similarly, the Science Education Faculty of the Universidad de A Coruña presented the experiences of a strategic methodology (Eco methodology) based on "Agenda 21 in the University" and Ecological Footprint. In a model of Universidad Santiago de Compostela, the results showed that the implementation of these tools was a great contribution to the university's approach toward sustainability, enhancing attitudes, knowledge, and behavior in the faculty, especially in transportation modes and paper and water usage. Adding to the experience, Marcote and Suárez (2011) recommended actively retaining the process of global teaching to adapt knowledge dispersed to a local reality.

In addition, Larran and Andrades (2015) found that the main factors of curricula analysis in Spanish universities covered environmental topics. They concluded that public universities are more likely to require an environmental course than private universities. Thus, the main topics covered in the programs are environmental management, sustainable tourism, and environmental economics or impacts. In fact, this study provided an idea of the shift that scientific and academic orientations were determined to involve in the overall process.

Furthermore, examining the integration of SD into mainstream university operations and curricula, Jorge, Madueño, Cejas, and Peña (2015) examined the main factors of implementation of sustainability practices in Spanish HEIs expressed through the expectations of rectors and senior management. Therefore, most implemented practices were related to students in their commitment to society and the staff dimension, and the relevant barriers to address were resistance to change, the lack of support from university administrators, and lack of financial resources.

Similarly, research has been conducted on the environmental attitudes of graduates from the Universidad de Zaragoza related to formation, outreach activities, conservation, and the intention to act in providing the University with adequate resources and habits in everyday academic life. This turned out to be a highly significant aspect for fostering pro-environmental behavior as well as the close relationship between conservation and behavior factors (Rodríguez-Barreiro et al., 2013). These results provided positive empirical evidence toward incorporating the conservation perspective tied to environmental education and the university's daily activities.

By contrast, as part of a sustainable initiative, a different practice was a green public procurement initiative, which was considered a key policy instrument, resulting in (Pacheco-Blanco & Bastante-Ceca, 2016) 21.5% of universities having put into practice different plans of action, considering that this topic is a relatively new activity in Spain. Therefore, knowledge of how these implemented initiatives can contribute to sustainable consumption using theoretical and implementation approaches is crucial.

In conclusion, all aforementioned evidence provides a much clearer idea of the current situation of national universities in Spain, as well as their efforts to achieve different areas of sustainable environmental standards; however, there are many areas to

improve upon depending on the case of each university. An example of weakness is the corresponding importance of an overall model, which can be flexible to adapt to a local reality and introduce a general approach in all areas; the need for involving stakeholders' participation and integration in the university management system.

### 2.9.1 Spanish University Governance

The process of modernization requires that universities implement four different levels of strategic pillar for governance: (1) Governance and university funding and accountability, (2) Governance and university structures, (3) Governance and government of the university, and (4) Governance of strategic aggregations (Ministry of Education, 2011, 2017). These help to understand the governance structure of Spanish public universities and the key role of the internal and external stakeholders participation.

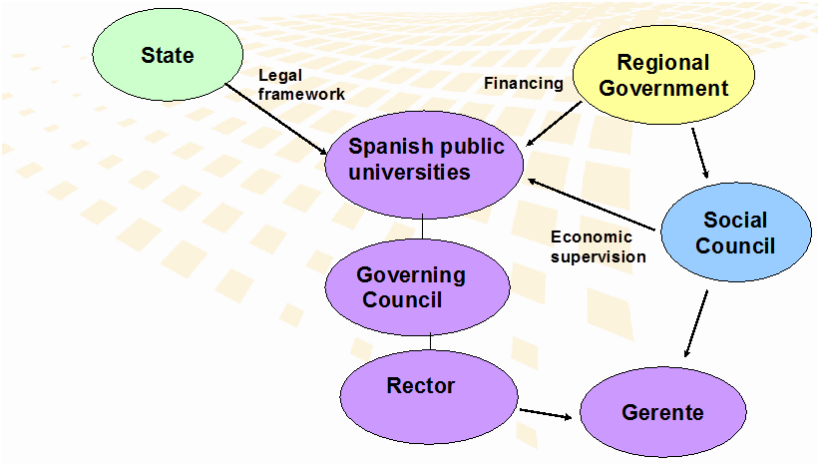


*Figure 16: Governance structure of Spanish public universities.*
Source: www.uc3m.es

This structure comprises some collegial bodies and individual roles that are determined in following the order: *Collegial bodies*: Social Council (Board of Trustees), Governing Council (Board of Governors), University Assembly (Senate), School and

Faculty Councils and Department meetings. I*ndividual roles*: Rector, Vice-Rector, Secretary-General, Manager, Faculty Deans, and School, Department, and Institute Directors.

Indeed, The Governing Council is a university's main governing body. It sets out the strategic and programmatic lines for teaching, research, human and financial resources, as well as the guidelines and procedures for their application. It should be composed of a maximum of 50 members, as shown in Fig. 16.

Therefore, the Governing Council constitutes 94 to 98% of internal stakeholders and 2 to 6% of external stakeholders.

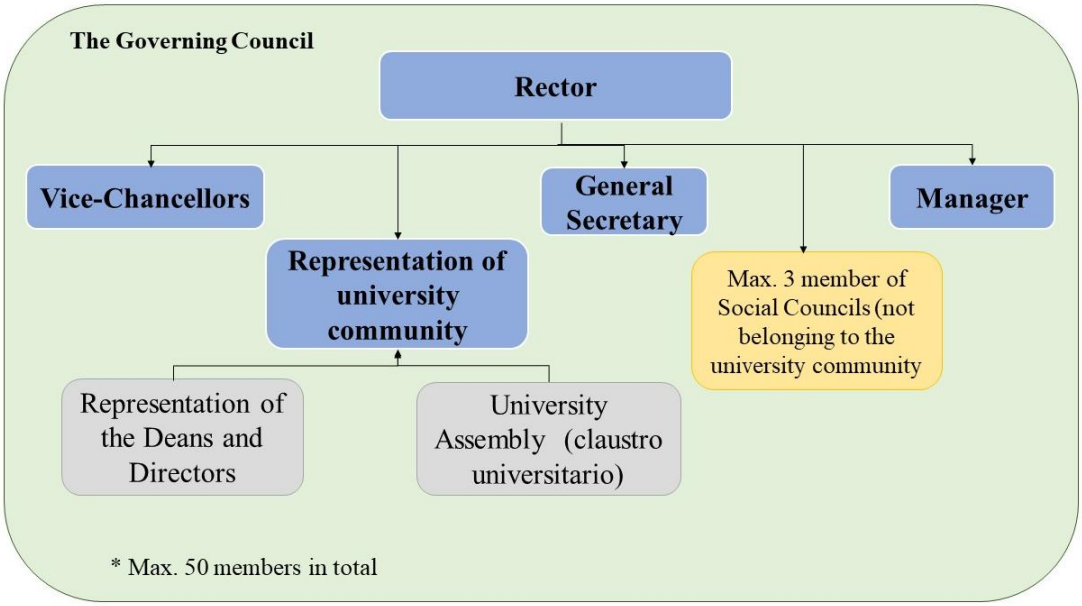


*Figure 17: The Governing Council structure.*

Source: (Official State Gazette num. 307, 2001; Official State Gazette num.89, 2007) elaborated by the author.

Figure 17 explains the hierarchy of the Governing Council board. The highest authority is the Rector, who presides over the General Secretary, Administration Manager, and Vice-Chancellors, as well as the representation of the university's

community, which includes the representation of the Dean and Directors, and the composition of all sectors in the University Assembly: students, administrative and service staff, professors from all categories, researchers, and researchers in training. Additionally, it can include a maximum of three Social Council members external to the university community.

### 2.9.2 Social Councils

Viegas et al. (2016) concluded that much literature has focused on curricular, organizational, and behavioral topics. The key stakeholders were students, teachers, and academic staff. They eventually found a gap in studies targeting the opinions of student representatives inside the university governance regarding their perception of Social Councils. Jorge et al. (2015) distributed a survey to rectors and senior management at Spanish HEIs regarding the implementation of sustainable practices, including seven dimensions: corporate governance, students, staff, society, environment, companies and continuous improvement. However, at the end of this study, they suggested the need for Spanish universities to increase their commitment to sustainability. Therefore, this study pretends to articulate the participation of stakeholders by their point of view in the sustainability of HEIs, focused on the collegiate body that acts as policymaker of the institution and represents the interest of society on the board of universities

The Social Councils of Spanish public universities, established in 1983, became a conference in 2005. They are organized by a general assembly, executive board, president, two vice-presidents, and general secretary. Furthermore, they have three sectoral committees: Academic, Transfer and relationship with society, and Economic and Secretary (Official State Gazette num.89, 2007). The organic law 4/2007 mentioned

that Social Councils are the organ of participation for society at the university, and must act as an element of the interrelation between society and university. In addition, it ordered the responsibility for supervising the economic activities of the university and performance of its services, as well as promoting the collaboration of the cultural, social, and professional activities of the university.

In this sense, the law of every autonomous community will regulate the composition and function of Social Councils. Table 9 summarizes the composition of Social Councils in every university; it represents 68% of external stakeholders and 32% of members from the academic community.

| University Board members | Elected by the Board of Government among its members | Selected according the law of every autonomous community |
|---|---|---|
| Rector | Professor | Personalities of cultural, professional, economic life, labor and social security, which may not be members of the own university community |
| The general secretary | A representative of administration staff and services | |
| Manager | Student | |

*Table 9: Composition of Social Councils in Spanish universities.*
Source: (Official State Gazette num.89, 2007) elaborated by the author.

### 2.9.3 Student Representatives

One of the main missions of universities are to contribute to society through preparing future graduates who will be key players in organizations, create companies,

and become future leaders; provide students with a sustainable awareness; and be committed to reducing their environmental impact.

According to Dahle and Neumayer (2001), it is necessary that students be part of "bottom-up" advocacy in raising authorities' awareness, as is a "top-down" approach where the faculty promotes environmental literacy and the understanding of the interrelationship between students' future roles in economic activities in their jobs, and model behaviors and attitudes that encourage a sustainable future. Student groups and sustainability offices are clear drivers of this process and the key to building a bridge to connect universities' operation to academic activities in the line of environmental practices (Fonseca, Alberto et al., 2011).

Given the abovementioned literature, the present study addresses the opinion of students in Spanish universities (the main target representatives of the student community) that are part of the CRUE. It is important to consider student representation as the main character of the university's life and assuming responsibility in the policy-making process, considering their proximity to the reality of the university's daily life.

The universities' code (Official Gazette, 2019, p. 542) explains the election process of student representatives: they must be studying to obtain an official degree, be elected by their peers, and belong to a collegiate body of government representing the university; furthermore, elected students would hold other duties according to the regulation of every university.[1]

[1] Translation by the author from. Capítulo VII, Art. 35, p.542. "Elección de representantes. Son representantes de los estudiantes que cursan estudios conducentes a la obtención de un título oficial: a) Los estudiantes que, elegidos por sus compañeros, formen parte de los órganos colegiados de gobierno y representación de la universidad. b) Los estudiantes que, elegidos por sus compañeros, ejercen otras funciones representativas, de acuerdo con la normativa de cada universidad."

Article 38, item 3, sub-paragraphs (a) to (e), of the same statute (Official Gazette, 2019, p. 543) declared that student participation and promotion of association, federation, and confederation according to the terms and legislation of every university should contribute in a pro-activity and co-responsibility manner to the balance, parity, and equal opportunities in student representation, as well as in the representative bodies of associations. Furthermore, they should promote equal opportunities for women and men in the formulation of their projects, the promotion of the participation of students with disabilities, the commitment of universities to sustainability and healthy activities, and finally, the design and strategic policies of the campus on which they develop their activity, especially improvements to campus sustainability, health, and solidarity.[2]

Regarding the previous legislation in Spain, student representatives play a key role in the sustainable development model according to the new generation of changes; this has increased the expectations of students of HEIs that are committed to addressing sustainability-related issues. In the National Union of Students study of the Higher Education Academy in the United Kingdom (Bone & Agombar, 2011), 32% of first-year students agreed that environmental reputation was important when they selected which university to apply to; moreover, 39% stated that the importance of the university's reputation for global development was a factor when choosing their universities.

The mission of the universities should not only be the expectation of teaching students about environmental sustainability development or encouraging attitudes to help the environment. Indeed, students are the future decision-makers, developers, and

[2] Translation by the author from. Capítulo VII, Art. 38, 3, p.543. "e) El diseño y las políticas estratégicas de los campus en los que desarrollan su actividad, y en especial la mejora de los mismos como campus sostenibles, saludables y solidarios."

managers of society's institutions. Therefore, universities are a great influence on government actors, industry, and the work power at local, national, and international levels (Association of African Universities, 2011).

Spain has officially named the Coordinator for representatives of public universities the CREUP; since its creation 12 years ago, this state association has grown to represent more than 1 million students from 35 universities, raising the voice of students at different HEIs at national and international levels (CREUP, 2017).

At the local level, such an association exists in the autonomous community of Madrid, which is comprised of six public universities from the area: Universidad de Alcalá, Universidad Autónoma de Madrid, Universidad Carlos III de Madrid, Universidad Complutense de Madrid, Universidad Rey Juan Carlos I, and Universidad Politécnica de Madrid.

### 2.9.4 Academic Experts and Eco-Campus Managers

Consequently, in this study, academic experts are considered researchers, professors, vice-chancellors, or academic staff who are closely related with the unit or are partly working in this area in their universities, and their expertise is joined work with technical staff or eco-campus managers, who work in the campus operation process.

In a similar structure, according to Article 48 of (Official Gazette, 2019, p. 547), the formation of Student Councils or representatives will be "A student representative of each Spanish university, public and private. For the universities that have a Student Council or similar body to represent students, the representative will be its President or

similar. In the universities where there is no Student Council, the representative will be appointed by the Governing Council at the proposal of the students elected from it."[3]

## 2.10 What is Important for Spanish Universities?

Some Spanish universities have implemented a responsible unit or department for integrating SD initiatives or operations on campus into their strategic plan, denoted as Eco-Campus Offices or Sustainable Units or Departments. According to Alba-Hidalgo (2015), 23 technical units or offices are focused specifically on sustainable actions in Spanish universities; however, the author highlighted that, in practice, there are more universities with units or departments that support sustainable initiatives, but these units are not exclusively working in this area. Some of the findings of the study showed that two-thirds of the participating universities had a specific budget of between €10,000 and €100,000. In 70% of the cases, external contributions were received from mainly regional and local administrations or foundations.

At the end of the three open calls of the Spanish University Strategy (2009, 2010, 2011), there was a notable effort to introduce strategic thinking in the Spanish Higher Education system and reorganize the governance system and partnership with other institutions; this experience has been relevant for understanding the strategic role of universities in the context of a general system and their socioeconomic environment. However, Casani Fernández de Navarrete and Rodríguez Pomeda (2015) agreed that the

[3] Translation by the autor. Capítulo XI, Art. 48, 1, p.547. "…a) Un estudiante representante de cada una de las universidades españolas, públicas y privadas. En las universidades en las que exista Consejo de Estudiantes, u órgano equivalente de representación estudiantil, la representación recaerá en su Presidente, o figura equivalente. En las universidades en las que no exista Consejo de Estudiantes, el representante será nombrado por el Consejo de Gobierno a propuesta de los estudiantes electos del mismo."

aims of this project were ambitious toward German and French excellence, taking into account the limitation caused by the economic crisis.

Based on these interpretations, Spanish universities have had a latent concern in addressing challenges to ensure sustainability for the future. One of the most important and difficult challenges is access to stable and adequate funding. In addition to the sudden and important decrease in revenue, regardless of each piece of autonomous legislation and particular economic situation of every university, all institutions have had to face scenarios with different income levels (Casani Fernández de Navarrete & Rodríguez Pomeda, 2015).

Apart from institutional leadership, new Information and Communication Technology (ICT) applied to education implies a new adjustment to a changing environment, and to the pressure of a globalized environment, where a competitive society demands a governance team that is qualified to manage and lead institutions with high quality to be innovative and reflect tangible results that allow Spanish HEIs to achieve international impacts.

Thus, the governance approaches of universities are associated with their reputation on and off campus. Of particular importance to HEIs is their image and the perspective of their stakeholders, which play crucial roles in the development of local, national, and international communities, wherein social responsibility and sustainability are associated with transparency, reputation, consensus, and effective monitoring of results, ensuring continuous quality improvements in university management (Salvioni, Franzoni, & Cassano, 2017). These concepts materialize into the model in Fig. 18.

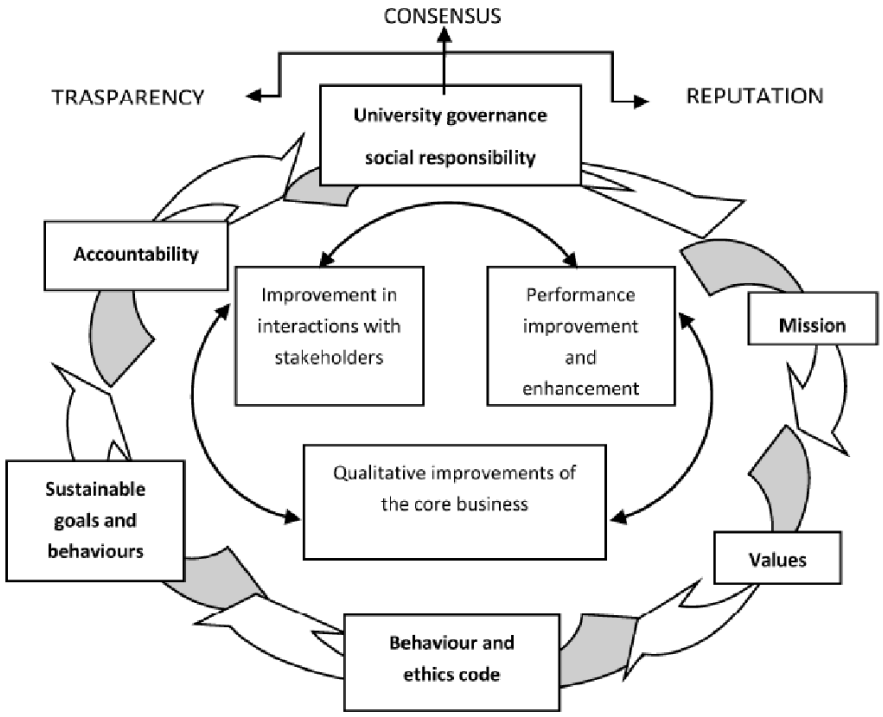


*Figure 18: The virtuous cycle of sustainable development in universities.*
Source: (Salvioni et al., 2017).

In this sense, Javier Benayas noted in a press release (expansion.com, 2014) that in a report prepared by the Institute for Energy Diversification and Savings (IDAE) in collaboration with the CRUE in 2012, they presented findings that showed Spanish universities experienced a reduced annual energy consumption per student from approximately 1,300 Kwh in 2010 to less than 1,150 Kwh in 2011, which clearly shows a decrease in electricity consumption by universities of 12%. This approach is an example of the impact of best practices for sustainability, how the views of general society and direct agents involved in the entire organization are articulated, as well as how sustainability is assessed to generate data that is shared and universities' performance results gain widespread recognition.

## 2.11 Conclusions

This chapter outlined fundamental theories obtained from a literary background, which examined the definitions of sustainability in higher education, and elements and variables that are integrated into worldwide paradigms. HEIs, which are not only focused on their primary and traditional mission of education but also on a strategic role of increasing awareness of environmentally sustainable development, create an institutional culture of sustainability, educate environmentally responsible citizenship, foster environmental literacy for all, practice institutional ecology, involve all stakeholders, and collaborate for interdisciplinary approaches (ULSF, 1990).

Thus, a sustainable campus implements an overall model to synchronize university activities aligned with a whole system, in short-, medium-, and long-term plans. Similarly, the implication of stakeholder management is articulating the useful information about actions, objectives, and motivations that help to foster SD. This theoretical review was focused on Social Councils and student representation in a national context, considering their relevant roles inside the Spanish University governance structure. Furthermore, a strong connection with media was shown to exist, in this case newspaper coverage, as a significant influence on audiences' perception of sustainability issues, to identify the trends and key topics that national newspapers have communicated, seeking a dialog that incorporates opinions of the general public.

Additionally, this literature review focused on the current Spanish Higher Education system's framework. Based on the new model of the university system established in 2007, it examined the new era of strategic planning, indicators, globalization horizon, incorporating new legislation, increasing the participation of

different social agents, and different challenges and priorities related to financial, economic, social, governance, and environmental issues, as well as the quality of Spanish universities at the international level, including rankings and global indicators, which are a reference for HEIs' performances.

In general, this chapter especially focused on a theme that brings to this study the premise of a better understanding of the following empirical results, discussion, conclusion, and recommendation.

# CHAPTER 3: METHODOLOGY

# CHAPTER 3: METHODOLOGY

This chapter provides a detailed description of the research methodology applied to answer the proposed RQs. This study employed a mixed-method study design (Saunders, Lewis, & Thornhill, 2016), a branch of multiple-methods research that combines the use of quantitative and qualitative data collection techniques and analytic procedures. The method designed undertakes concepts in a single research study or series of linked studies, answering one or more question from different perspectives to provide a more comprehensive response.

The scope of this study was to address the management model of Spanish Universities regarding SD, integrating different stakeholders' perceptions. The main research objective of the dissertation is to contribute to the knowledge and understanding of the current scientific debate, which was proposed in the literature review. Thus, it attempts to provide a better outline of the role of stakeholders' opinions and participation in universities.

I address three central RQs:

(RQ1) What are the key perceptions of stakeholders about sustainability in Spanish Universities?

(RQ2) How can direct stakeholder participation be integrated into the university management model to implement policies toward sustainable SD?

(RQ3) How were sustainability- and university-related topics reported and portrayed by Spanish newspapers to the public?

Under this context, the central components of this study combined primary and secondary data from different key actors in Spanish universities.

## 3.1 Approach to central research questions

This study was based on a stakeholder approach. First, the core of the study was answering *RQ1 (What are the key perceptions of stakeholders about sustainability in Spanish universities?),* while considering the complex ecosystem that university communities have and their development of a sustainable environment. Moreover, the perceptions explored could become potential drivers of a better management system. Along this line, I proposed answering *RQ2 (How can direct stakeholder participation be integrated into the university management model to implement policies toward sustainable development?)* because of the high value of stakeholders' interconnection and the contribution of their active role, as well as their guidance in the strategic process to answer exigencies of the changing environment. Nevertheless, this application of stakeholder perceptions is always conditioned by the concrete actions of the university governing council.

Following on from the previous central RQs, I proposed *RQ3 (How were sustainability and universities topics reported and portrayed by Spanish newspapers*[4] *to the public?)* I also included media outlets as a strategical stakeholder, particularly editorial content mainly from newspapers and press agencies at the national level, which has been interpreted by many academics as a vehicle of public opinion to be formed. Results were expected to be translated into meaningful and understandable information for sustainability challenges and a stakeholder-oriented management system, able to innovate and adapt to this dynamic ecosystem.

[4] When it refers "newspapers", it attributes to news and editorial content that can come from press agencies or media outlets in accord with MyNews database

This study employed a combined design to provide a better understanding of the research problem. A mixed-methods design allows meanings and findings to be elaborated, enhanced, clarified, confirmed, illustrated, and linked to produce more complete knowledge (Saunders et al., 2016). For this reason, three research methodologies and datasets were used to facilitate a robust theoretical contribution.

First, a statistical analysis was conducted based on Tukey's (1977) contribution of exploratory data analysis through examining individual variables and their components from primary qualitative data. Key aspects for analysis were data from Social Councils, Students Representatives, Academic Experts, and Environmental Managers who answered a specific survey for each group with similar variables. In particular, the focus stakeholders were key representatives who can be considered drivers and high influencers in the university community; these factors were explained in Chapter 2 and are explained briefly in the sample sections of this chapter. This first step was a starting point of the study to guide the next method.

The next method applied the qualitative techniques of focus groups and in-depth interviews to collect perceptions of Students Representatives, Academic Experts, and Environmental Managers toward a complementary validation of the results to ensure that the data revealed the "reality" and helped to interpret it. Denzin, (2012) agreed that the combination of multiple methodological practices is best understood as a strategy that adds rigor, breadth complexity, richness, and depth to any inquiry. Finally, to answer the last central RQ exploring and analyzing society's perception, I used a collection of national newspapers (2014–2017) from the MyNews database, which included 1,285 national media outlets using topic modeling, a suite of algorithms for discovering the main themes, patterns, and most crucial relationships between them for massive

collections of documents (Blei, 2012). Furthermore, in this chapter, the section of topic modeling is explained in detail.

### 3.1.1 Sub-questions

Regarding the core of the study, I defined sub-questions for every main research question. The purpose of sub-questions is to redefine the research and provide specific issues; they also allow the researcher to elicit more information to clarify points and explore the content in more depth (Creswell, 2012). In this context, it was deemed relevant and interesting to explore, in detail, the key stakeholders' appraisals of the following questions: (a) What is the sustainability model that they perceive in their universities at present? (b) What is the model that each stakeholder group defends? (c) What do the stakeholders observe in their universities regarding the actions and initiatives implemented by university management toward sustainability? All these aspects are linked to the main pillars of sustainability in higher education, combining education, research, external community or outreach, and university operations (Cortese, 2003).

In terms of the role of stakeholders in the university management model to implement policies toward SD, Freeman et al. (2007, 2018) underlined the direct contribution of stakeholders' integration into the value creation process of an organization, where the knowledge and an active role of stakeholders can affect the achievement of an organization's purpose. Along this line, external stakeholders were also included in the study; these were the general society and their opinions represented by the content of national newspapers to emerge into the most relevant trends and interconnected topics of specific issues of sustainability and universities. The research sub-questions are presented as follows:

**(RQ1) What are the key perceptions of stakeholders about sustainability in Spanish universities?**

*RQ1.1 What is the mission of a sustainable university in Spain?*

*RQ1.2 What are the most significant sustainable themes among universities for stakeholders?*

*RQ1.3 What are universities doing for sustainable development and how are they performing?*

*RQ1.4 What must be done in universities to be (more) sustainable?*

*RQ1.5 What are the main barriers and challenges to implementing sustainable development in Spanish universities from the stakeholders' perspective?*

**(RQ2) How can stakeholder participation be directly integrated into the university management model to implement policies toward sustainable development?**

*RQ2.1 Do the stakeholders have some knowledge of their universities' sustainable initiatives?*

*RQ2.2 How do stakeholders participate in universities' management and play an active role in the pursuit of sustainable development?*

**(RQ3) How were sustainability and universities topics reported and portrayed by Spanish newspapers to the public?**

*RQ3.1 Which are the main trends in Spanish newspapers covered in the MyNews database toward sustainability and higher education through the years 2014–2017?*

*RQ3.2 Is there any correlation between the media's approach to a specific issue and the subsequent perception by stakeholders?*

## 3.2 Description of the Methodology: Mixed-Methods Research Design

This study merges quantitative and qualitative data into the same aims. Quantitative data yield numerical information that can be statistically analyzed; they can assess the frequency and trends of numerous people, unlike qualitative data, which provides actual words of people and many other nuances that can add a complex picture of the situation of their perceptions (Creswell, 2012). Thus, this research category, which combines both approaches, is a mixed-methods design, where the qualitative data add domains that quantitative data cannot explain alone as well as insights into the experiences of participants (Leavy, 2017; Schensul, Schensul, & LeCompte, 2012). Hence, the main aim of the study was not only to analyze relationships and trends but also simultaneously address reasons and opinions. According to Patten and Newhart (2017), the most appropriate research design approach is explanatory. Therefore, a sequential explanatory research design considers when as a first step the researcher conducts a quantitative method, where the results are, and the builds on the results as a first explanation to be followed by a qualitative research method to disclose the results in more detail (Creswell, 2014).

In the first stage of the project for this thesis, I designed a quantitative survey launched in 2016 and continuing into 2017, leading to understanding stakeholders' general knowledge about the topic, their backgrounds, main interests, and concerns based on an assessment of their university performance and initiatives. I complemented the results with qualitative techniques to help explain relationships between variables and differences among participants' opinions. Furthermore, this allowed seeking explanatory answers and reasons for the quantitative findings. During the second stage of the study in

2017–2018, the results collected in the first stage assisted the design of the semi-questionnaire for the qualitative techniques. In this case, the initial quantitative phase allowed me to characterize individuals along with certain traits of interest related to the RQs and the formulation of questionnaire items; following this was the third phase for a quantitative method perspective, the topic modeling of mass media. Thus, this research design suggests a "dynamic approach to the research process, which recognizes that mixed-methods research is both interactive and iterative, where one phase subsequently informs and directs the next phase of data collection and analysis" (Saunders et al., 2016, p.71). I attempted to consolidate the findings of previous stages of the research and convergence the findings as a way to strengthen the knowledge (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Figure 19 illustrates the research design of the study to articulate the central RQs and their methodology.

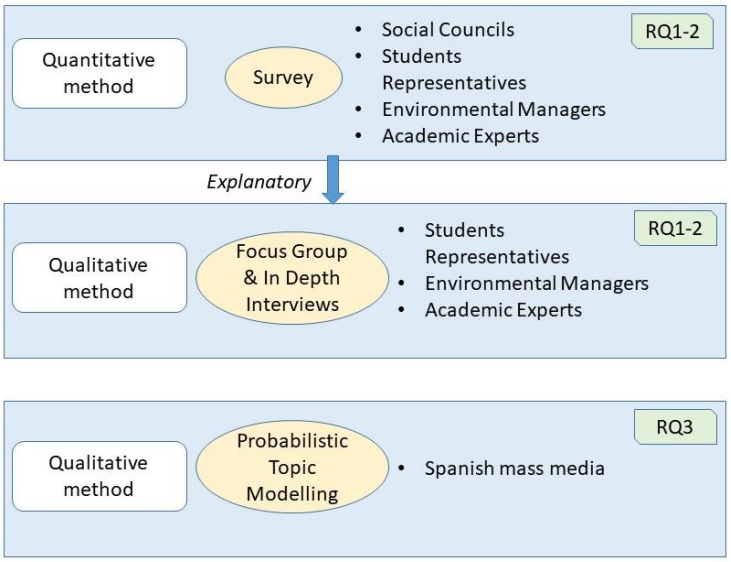


*Figure 19: Mixed-method research design.*

Note: Elaborated by the author.

In addition, the integration of the results of both approaches occurred in multiple stages, and data collected from the survey are compared among the different participants in horizontal and vertical interpretations in Chapters 4 and 5.

### 3.2.1 Description of the Methodology: Descriptive statistics–Exploratory survey

As a starting point for the quantitative phase, I designed a survey with a five-point Likert scale based on an extensive literature review of global and mainly local studies close to sustainability in universities. The primary references used were as follows Alba-Hidalgo, (2015); H. M. Alshuwaikhat & Abubakar, (2008); Amrina & Imansuri, (2015); Barañano, M., (2012); Benayas, J., (2010); Center for Sociological Research (CIS), (2016); Conference of Social Councils of Spanish Universities, (2014); Eurobarometer, (2014); European Commission, (2017); Larrán, J. & Andrades, F., (2015); Larrán, J. et. al., (2009); Longo, Medeossi, & Padoano, (2015); Sáiz, Maldonado, & García, (2010); L. Velazquez, Munguia, Platt, & Taddei, (2006); Wright, (2010); and Wu, Singh, & Tikasz, (2013). The prominent literature defined provided a different perspective for focusing on university systems of sustainability. In this context, I identified a deficit in studies from the latest years and research from the local situation in these themes. Hence, the literature review cited disclosed an essential gap in the local approach in connection with a global vision, thereby highlighting the need to align with a holistic perspective.

Consequently, I defined six key factors (which are shown in Fig. 20) to include high potential in developing strategies and best sustainable practices. The first-factor, "*Framework,"* attempted to obtain the general knowledge of participants on sustainability and environmental topics and the extent to which their universities get involved with them. The second factor, "*Assessment of universities' sustainable commitment,"* focused

on universities' actions for embracing sustainability as their priority, including strategic management tools and agreements at the global level. The third factor, "*Promoting environmental sustainability in society through the mission of the university*," highlighted the core mission of the HEIs, researching, teaching, and transferring knowledge (outreach); this connects the main mission to the sustainability vision. Therefore, the fourth factor, *"Environmental management campus,"* calls attention to the operational activities on campus and the different elements of mobility, recycling, energy efficiency, water consumption, Eco-campus, environment certifications, settings, and design buildings. The fifth factor, *"Knowledge and assessment of universities' performance,"* concentrated on practical actions and performance according to the stakeholders. Finally, the sixth factor, "*Principal barriers to introducing sustainable actions at universities,"* was employed for analysis from different perspective.

These factors were the approach in every questionnaire survey as well as some in the semistructured questionnaires for the qualitative techniques.

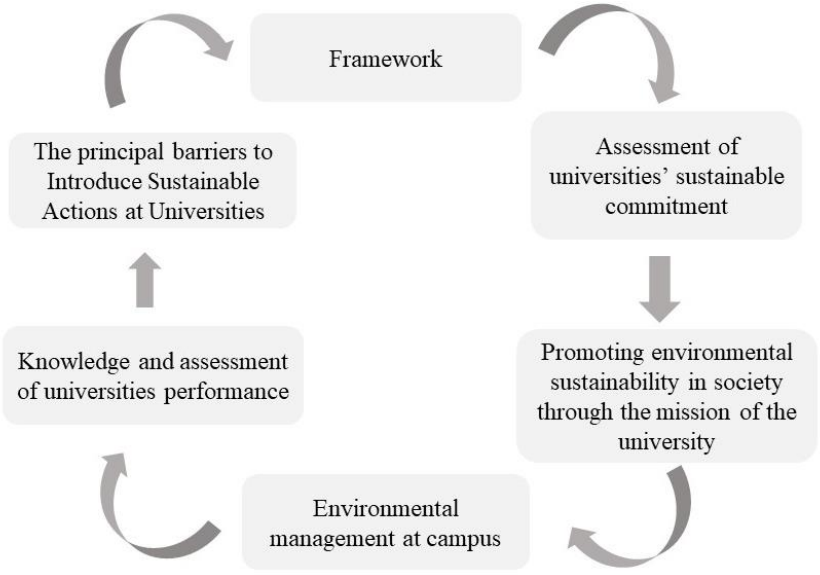


*Figure 20: Main factors in sustainable universities.*

Note: Elaborated by the author.

The questionnaires were tested on and reviewed by experts in the field and potential participants. A pilot questionnaire was then developed and tested on small groups of our target respondents to refine items and the data collection process. Furthermore, the questions for the group of environmental managers were designed with a focus on identifying the key facts of their universities' activities from their experiences. Unlike the other groups, the questions focused on their opinions. One of the most striking features was the number of universities by different groups: 44 universities' Student Representatives, 16 universities' academic experts, 13 universities' Environmental Managers, as well as Social Councils from 11 autonomous regions. This took into account that according to Alba-Hidalgo (2015), only 25 universities have a specific office to manage the sustainable environment of their campus among 76 Spanish universities in all 17 autonomous regions in the country.

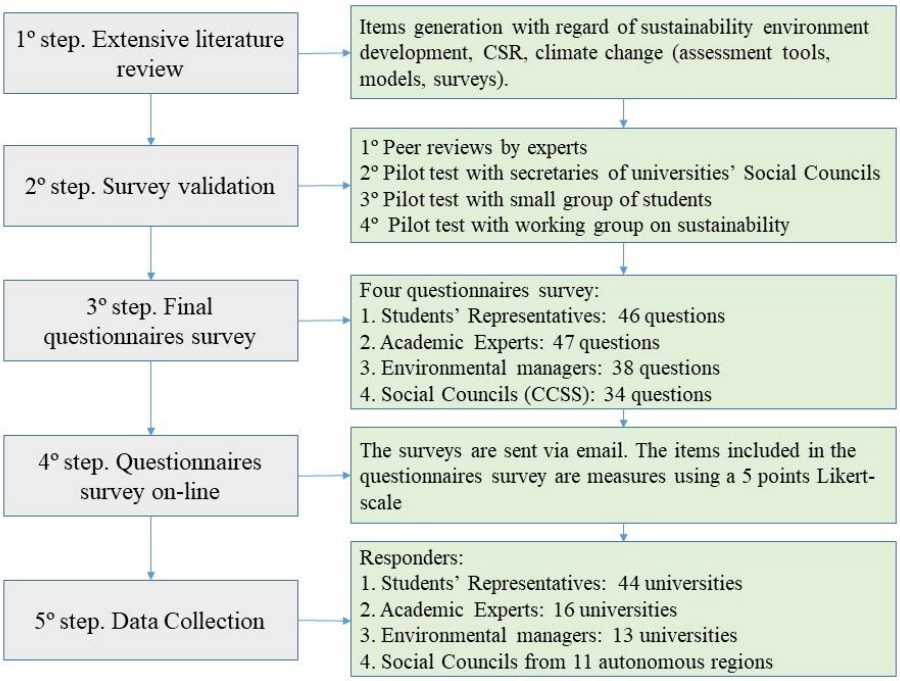


*Figure 21: Design and validity process of the questionnaires.*

Note: Elaborated by the author.

The data analysis approach was descriptive statistic, enabling variables to be described and compared numerically, focusing on the central tendency that represents the value that occurs most frequently (mode) and the middle value (mean), and includes all data values other than those at the extremes of the distribution (trimmed mean) (Saunders et al., 2016). Data were analyzed using SPSS version 23 to determine the overall frequency and percentages of every variable as well as the structure of the descriptive results for the first stage of findings. The main concern in developing this survey was to have a point of reference for the latter stage of the project.

#### 3.2.1.1 Ethics

The current doctoral thesis contributed to the coordinated national project "New horizons in research and innovation for sustainable energy and transport in the urban environment" in the sub-project: "Research on energy efficiency and sustainable transport in urban areas: analysis of scientific development and the social perception of the subject from the perspective of metric information studies" (cso2014-51916-c2-1-r), Spanish Ministry of Economy and Competitiveness (2015-2018).

The study was approved by the Research Ethics Board of the Universidad Autónoma de Madrid under the resolution CEI-79-1460. The resolution was positive because it met all ethical requirements based in the Code of Good Research Practices of the university (see Annex 2).

#### 3.2.1.2 Data collection

The first survey was launched to Social Councils between March and June of 2016 using the Lime Survey platform. Continuing along the same line, a second survey

was adapted with the same number of main variables to Student Representatives from March to June of 2017 using Google Forms. Simultaneously, a third model of the survey followed the same main characteristics but included some adaptations according to participants' roles and expertise in the area was sent to Environmental Managers, and a fourth questionnaire was sent to academic experts via the same platform (for more detail see Fig. 21). The primary purpose of using Lime Survey was its advantage of being able to customize the questionnaires outline to have a better view and broader picture of the survey for the respondent. However, the platform linked to an external server owned by a partner university, which was a critical limitation when obtaining backups of the data. In other words, it was crucial to download all data continuously because if the server had problems then the data would be lost without an opportunity to recover it. Thus, I decided to move the surveys to the Google Forms basic service, which is highly limited in terms of being able to customize the outline of the survey; nevertheless, the primary advantage was accessibility to the data at any time, the possibility of making changes even if the survey was enabled, and the most critically, the guarantee and safety of backup options.

#### 3.2.1.3 Sample

The survey was distributed by personalized emails to the intended participants from all 76 universities registered in the CRUE (see Table 10). The sampling frame for the group of academic experts, Social Councils, Environmental Managers, and Students Representatives was based on the nonprobability technique of snowballing, where if a participant is a particularly plentiful source of information and/or seems to be well connected with members in the larger group of interest, the researcher may ask him or her to suggest additional participants (Leavy, 2017). In this connection, the Sustainability

working group from the CRUE was a key driver to connect with key stakeholders actively participating in different areas and universities, as well as some Social Councils from the executive board. In the case of the Student Representatives, CREUP was an excellent support for the data collection at the national level.

In the case of the Student Representatives group, I connected to the representatives of CREUP for further collaboration in the data collection process; the survey was forwarded to representatives of each university that belonged to the Students Association at the national level. Additionally, I identified the Student Councils of 76 universities from their webpage, mostly by email. The results yielded 314 responses from 44 universities. Concerning academic experts and Environmental Managers, the surveys were also supported by some members of the Sustainability Commission of the CRUE, who encouraged another member of the group to answer the questionnaire. The results were 26 responses from academic experts from 16 universities (it was not mandatory to provide the name of the university). Notably, in some universities, no relevant institutionalized department or research group exists. Finally, 25 responses were obtained from Environmental Managers from 13 universities (again, it was not mandatory to provide the name of the university).

| **Nº** | **Universities** | **Region** | **Type** |
|---|---|---|---|
| | **Andalucía** | | |
| 1 | Universidad de Almería | Almería | Public |
| 2 | Universidad de Cádiz | Cádiz | Public |
| 3 | Universidad Córdoba | Córdoba | Public |
| 4 | Universidad Loyola Andalucía | Córdoba | Private |
| 5 | Universidad de Granada | Granada | Public |
| 6 | Universidad de Huelva | Huelva | Public |
| 7 | Universidad de Jaén | Jaén | Public |
| 8 | Universidad de Málaga | Málaga | Public |

| Nº | Universities | Region | Type |
|---|---|---|---|
| 9 | Universidad Internacional de Andalucía | Sevilla | Public |
| 10 | Universidad Pablo de Olavide | Sevilla | Public |
| 11 | Universidad de Sevilla | Sevilla | Public |
| | **Aragón** | | |
| 12 | Universidad San Jorge | Zaragoza | Private |
| 13 | Universidad de Zaragoza | Zaragoza | Public |
| | **Asturias** | | |
| 14 | Universidad de Oviedo | Oviedo | Public |
| | **Canarias** | | |
| 15 | Universidad de Las Palmas de Gran Canaria | Las Palmas de Gran Canaria | Public |
| 16 | Universidad de La Laguna | Tenerife | Public |
| | **Cantabria** | | |
| 17 | Universidad de Cantabria | Santander | Public |
| | **Castilla-La Mancha** | | |
| 18 | Universidad de Castilla-La Mancha | Ciudad Real | Public |
| | Castilla y León | | |
| 19 | Universidad Católica de Ávila | Ávila | Private |
| 20 | Universidad de Burgos | Burgos | Public |
| 21 | Universidad de León | León | Public |
| 22 | Universidad Pontificia de Salamanca | Salamanca | Private |
| 23 | Universidad de Salamanca | Salamanca | Public |
| 24 | IE University | Segovia | Private |
| 25 | Universidad Europea Miguel de Cervantes | Valladolid | Private |
| 26 | Universidad de Valladolid | Valladolid | Public |
| | **Cataluña** | | |
| 27 | Universitat Abat Oliba CEU | Barcelona | Private |
| 28 | Universitat Autònoma de Barcelona | Barcelona | Public |
| 29 | Universitat de Barcelona | Barcelona | Public |
| 30 | Universitat Internacional de Catalunya | Barcelona | Private |
| 31 | Universitat Oberta de Catalunya | Barcelona | Private |
| 32 | Universitat Politècnica de Catalunya | Barcelona | Public |
| 33 | Universitat Pompeu Fabra | Barcelona | Public |
| 34 | Universitat Ramon Llull | Barcelona | Private |
| 35 | Universitat de Vic | Barcelona | Private |
| 36 | Universitat de Girona | Girona | Public |
| 37 | Universitat de Lleida | Lleida | Public |
| 38 | Universitat Rovira i Virgili | Tarragona | Public |
| | **State** | | |
| 39 | Universidad Internacional Menéndez Pelayo | Madrid | Public |

| Nº | Universities | Region | Type |
|---|---|---|---|
| 40 | Universidad Nacional de Educación a Distancia | Madrid | Public |
| | **Comunidad Valenciana** | | |
| 41 | Universidad de Alicante | Alicante | Public |
| 42 | Universidad Miguel Hernández de Elche | Alicante | Public |
| 43 | Universitat Jaume I | Castellón | Public |
| 44 | Universidad Católica de Valencia San Vicente Mártir | Valencia | Private |
| 45 | Universidad CEU Cardenal Herrera | Valencia | Private |
| 46 | Universitat Politécnica de Valéncia | Valencia | Public |
| 47 | Universitat de Valéncia | Valencia | Public |
| | **Extremadura** | | |
| 48 | Universidad de Extremadura | Badajoz | Public |
| | **Galicia** | | |
| 49 | Universidade da Coruña | A Coruña | Public |
| 50 | Universidad de Santiago de Compostela | A Coruña | Public |
| 51 | Universidad de Vigo | Vigo | Public |
| | **Islas Baleares** | | |
| 52 | Universitat de les Illes Balears | Palma de Mallorca | Public |
| | **La Rioja** | | |
| 53 | Universidad Internacional de La Rioja | La Rioja | Private |
| 54 | Universidad de La Rioja | La Rioja | Public |
| | **Comunidad de Madrid** | | |
| 55 | Universidad de Alcalá | Madrid | Public |
| 56 | Universidad Alfonso X El Sabio | Madrid | Private |
| 57 | Universidad Antonio de Nebrija | Madrid | Private |
| 58 | Universidad Autónoma de Madrid | Madrid | Public |
| 59 | Universidad Camilo José Cela | Madrid | Private |
| 60 | Universidad Carlos III de Madrid | Madrid | Public |
| 61 | Universidad CEU San Pablo | Madrid | Private |
| 62 | Universidad Complutense de Madrid | Madrid | Public |
| 63 | Universidad a Distancia de Madrid | Madrid | Private |
| 64 | Universidad a Europea de Madrid | Madrid | Private |
| 65 | Universidad Francisco de Vitoria | Madrid | Private |
| 66 | Universidad Politécnica de Madrid | Madrid | Public |
| 67 | Universidad Pontificia Comillas | Madrid | Private |
| 68 | Universidad Rey Juan Carlos | Madrid | Public |

| Nº | Universities | Region | Type |
|---|---|---|---|
| | **Región de Murcia** | | |
| 69 | Universidad Católica San Antonio de Murcia | Murcia | Private |
| 70 | Universidad de Murcia | Murcia | Public |
| 71 | Universidad Politécnica de Cartagena | Murcia | Public |
| | **Comunidad Floral de Navarra** | | |
| 72 | Universidad de Navarra | Pamplona | Private |
| 73 | Universidad Public de Navarra | Pamplona | Public |
| | **País Vasco** | | |
| 74 | Universidad de Deusto | Bizkaia | Private |
| 75 | Euskal Herriko Unibertsitatea | Bizkaia | Public |
| 76 | Mondragon Unibertsitatea | Gipuzkoa | Private |

*Table 10: List of Spanish universities associate with the CRUE.*
Source: (CRUE, 2016).

### 3.2.2 Description of the Methodology: Focus Group

In the second phase of the study, the first qualitative technique was the focus group, which is a process of collecting data through interviews with a group of people. These people are arranged to examine and obtain several perspectives on a specific set of topics (Kitzinger, 2005; Sreejesh, Mohapatra, & Anusree, 2014). Focus groups help to understand views, preferences, and cultures. The uses of this technique are often overlooked in mixed-methods studies; one of the most common uses is during the exploratory phase to develop items for inclusion in a further step. However, it also measures attitudes and addresses significant gaps that numbers cannot explain by themselves (Barbour, 2007). According to Conradson (2005), focus groups explore the gaps between what people say and what they do, especially in environmental themes; thus, the technique was suitable for this study.

A successful focus group interview should consider select participants with homogeneous main characteristics, experience, or proximity to the topic to be discussed;

this would facilitate interactions among participants and likely yield the best information. Interaction is one of the most significant principles; it produces data and insights that could reveal aspects that complement the study, such as the sharing of experiences, concerns, needs, and argumentative statements that question or disagree with other views (Kitzinger, 1994)

Methodologically, it involves a group of 6 to 8 people, enough for participants to feel comfortable for a dynamic discussion that lasts from 1 to 2 hours (Liamputtong, 2011). The participants were selected to be representative of the group of stakeholders of the study's focus; participants were chosen because they were able to contribute valuable opinions to answer the RQs.

The focus group was conducted using semistructured questions based on the previous variables in Fig. 20. This questionnaire was doubled checked by peers in the field and a formal protocol (see Annex 1) in an orderly manner. To fulfill the research objectives, it was deemed necessary that the focus group enable further exploration of the key themes of perceptions and attitudes, and an interactive discussion was required to construct meanings to enrich the data.

#### 3.2.2.1 Data collection

During the second phase of the study, some focus groups were conducted in the first semesters of 2017 and 2018, mainly in the Universidad Autónoma de Madrid, because of the proximity and profile of the participants. There were three groups of targets: Student Representatives, Vice-Chancellors, and Environmental Managers. The Student Representatives were selected from the university webpage that contained a list of association and representations by faculty. They were contacted directly via telephone,

provided with a quick explanation of the primary purpose, and asked about their availability.

Organizing the Vice-Chancellors' focus group was a more challenging process because of their complex duties and busy agendas. However, with the help of some researchers from the same working group, a mini-group of the key members of the board was organized. The advantages a mini-group with three to six respondents are highly insightful data as well as more effective and extensive probing into the subject matter (Sreejesh et al., 2014). Similarly, the Environmental Managers' focus group was set up using direct connections to the Eco-campus offices, a specific unit or department that manages the sustainability initiatives at the campus at an operational level; this Eco-campus office is often under the Vice-Chancellor or academics responsible for sustainability.

The focus groups lasted between 60 and 90 minutes; typically, a focus group lasts for roughly 1 hour (Patten & Newhart, 2017). For the data analysis, I used MAXQDA 2018 (VERBI Software GmbH, Berlin, Germany), which allows the researcher to organize all qualitative data and provides an easier way to visualize and interpret the information. I found this software the most adequate for the analysis of the data because of the ability to operate the options to code, organize by groups, and identify specific segments in the transcriptions. Furthermore, MAXQDA 2018 allows the results to be downloaded in PDF format as well as access to them after expiration of the subscription. However, one of the main limitations was the world cloud option and visual tools because it was too complex to organize the data manually according to the researcher's needs, for example, to compare specific groups.

#### 3.2.2.2 Sample

During the recruitment process, the participants were selected based on an affordable comparison between individuals; additionally, a critical characteristic was the role they play in the university community, as leaders, authorities, and managers close to the operation process. Student leaders were connected through the CREUP association; many Students Representative from the UAM are active members of the national association, and some belong to parallel student associations in their faculties. Moreover, a focus group of Student Representatives in Madrid of SDSN Youth was organized through their leader, since they usually have working sessions every month. SDSN Youth is a platform for young people to connect, collaborate, and integrate their ideas and perspectives into national and regional pathways to implement the SDGs; the global team has 140 members in 35 countries (SDSN Youth, 2018).

In this context, the Vice-Chancellor and Environmental Manager focus groups were determined through opportunistic sampling (Liamputtong, 2011) during data collection; in conducting this type of research, new opportunities for capturing the developing or emerging nature of qualitative research in the study appear (Creswell, 2012). Therefore, I took advantage of the respondents' roles, in this case the Sustainability and Campus Vice-Chancellors who were part of the Sustainability Commission of CRUE, and the heads of the Eco-campus offices from the UAM who have technically been working in the same commission for many years. Hence, participants from these last two groups were experts with a long career in the area.

Table 11 summarizes the seven focus groups, their participants, and dates. Regarding ethical procedures, discussions were audio-recorded and transcribed by the

researcher, and included the agreement of protection data and anonymity of individual references. Procedures at all stages met the Code of Good Research Practices of the UAM (Consejo de Gobierno de la UAM [Governing Board of UAM], 2013).

| Nº | Participants | University | Date |
|---|---|---|---|
| 1 | Seven Students Representatives from Faculty of Business and Economic Sciences (ST_RECO17) | UAM | 05.04.2017 |
| 2 | Six Student Representatives from Faculty of Business and Economic Sciences (ST_RECO18) | UAM | 08.05.2018 |
| 3 | Eight Student Representatives from the School of Engineering (ST_RSE) | UAM | 21.04.2017 |
| 4 | Five Student Representatives in the Government Council (ST_R Univ.Gov_Con.) | UAM | 31.03.2017 |
| 5 | Five Student Representatives in Madrid of SDSN Youth (SDSN Youth) | UAM, UC3M, UPM | 24.04.2017 |
| 6 | Vice-Chancellors: Undergraduate Studies, Sustainability and Campus, and Strategy and Planning (three Vice-Chancellors) | UAM | 08.05.2018 |
| 7 | Eco-Campus Team: Eco-Campus Manager, Leader of Environmental Participation, Leader of Electric Cars on Campus, and Infrastructure Manager (four members) | UAM | 25.05.2018 |

*Table 11: List of focus groups and participants.*

Note: Elaborated by the author.

### 3.2.3 Description of the Methodology: In-Depth Interviews

This research also included individual in-depth interviews, where knowledge was constructed through interactions between the interviewer and interviewee (Kvale, 2007). Therefore, such interviews can be subdivided into three categories according to Sreejesh et al. (2014): (1) Non-directive or unstructured interviews, (2) Semistructured interviews, and (3) Standardized open-ended interviews. In this case, I attempted to conduct semistructured interviews, because in the previous stage of the project, four questionnaire surveys were conducted to explore trends and a general understanding of the themes. Thus, six variables were also identified during the extensive literature review for group

topics, which could be relevant to discuss to answer the core RQs. A semistructured interview has a sequence of topics to be covered and questions; nevertheless, it is open to changes of sequence and question form to follow up the answers provided (Kvale, 2007).

On the top of this, when preparing the configuration of interviewees to complement previous data collected from other techniques, I selected five key potential participants from experts at academic and technical levels and student leaders at the national level. The technique more suitable to approach interviewees was hidden-issue questioning, which was used to identify their personal opinions that would be too complex for them to reveal directly, and a direct approach to hidden issues or items that could be limited because of their roles or positions in their groups (Sreejesh et al., 2014).

In terms of ethical aspects, Annex 1 shows the protocol followed with the participants to establish clarity on the data protection and purpose of the information's use.

#### 3.2.3.1 Data collection

For the data collection process, key leaders and experts in the area at management and technical levels were identified as a target and reached through the Sustainability Commission of the CRUE. The participants were based in different locations across Spain (Universidad Miguel Hernández, Alicante; Universitat de Valéncia, Valencia; Universidad de Cantabria, Cantabria; and Universidad Autónoma de Barcelona, Barcelona), which was a barrier to holding face-to-face meetings. Because the central questions sought to obtain perceptions point of view of stakeholders, online (Skype) interviews were deemed a highly useful technique well-suited to the mixed-methods design. The richness of online interviews is that the interviewees are easily accessible,

making the researcher and participants more relaxed because they are in a familiar environment, and thus, there is a greater probability of them being willing to discuss personal matters and opinions (Salmons, 2009). As an initial point for reaching the interviewees, the researcher followed the established protocol to introduce the intention of the Skype meetings, an abstract of the project, and general terms of the ethical aspects. After confirmation of the first email, the following emails were to agree a time, date, and tool to be used in the conversation.

The online platform used to conduct the interviews was Skype because it is simple and free; audio-recording was conducted simultaneously and the interviewer took notes of relevant facts to maintain interaction with the participant; and a checklist was followed to clarified the most relevant topics and maintain the correct speed of conversation.

In the case of the single interview with the representative of CREUP, it was a face-to-face meeting. Because the interviewee was flexible with time and was in Madrid, the researcher organized a meeting in a private area of a local cafeteria, and the interview was audio-recorded following the protocol. Interviews lasted between 40 and 80 minutes, transcripts of the interviews were made right after each meeting, data were coded, and qualitative analysis was completed in MAXQDA 2018. Chapter 4 will further introduce the integration of all the qualitative data collected.

#### 3.2.3.2 Sample

Focusing on the characteristics of the interviewees (academic experts, Vice-Chancellors, Managers and Student Representatives), In-Depth Interviews was proper for facilitating their contribution. According to Sreejesh et al. (2014, p. 48), it is primarily used to interact with busy executives, technical experts, and thought leaders. The

responders were selected following maximal variation sampling, and the researcher sampled cases or individuals that differed in some characteristic or trait. This procedure requires identifying the characteristics and then finding sites or individuals that display different dimensions of that characteristic to develop numerous perspectives (Creswell, 2012). This type of sampling is also defined as heterogeneous; it uses the researcher's judgment to select participants with sufficiently different characteristics to provide the maximum variation possible in the data collected to answer the RQ (Saunders et al., 2016).

In fact, the target respondents belonged to different areas of expertise because the Sustainability Commission has specific working groups. Table 12 presents a description of every participant, who were selected owing to the variables linked to the RQs.

| **Nº** | **Participants** | **University** | **Date** |
|---|---|---|---|
| 1 | President of the Assessment Team for Sustainability in Universities, CRUE (Pres_Ass_Sus.) | Professor and Environmental Manager, Universidad Miguel Hernández, Alicante. | 03.05.2017 |
| 2 | Executive Secretary, Sustainability Commission, CRUE (Exec_Sus_Comm.) | Vice-Chancellor of Academic Planning, Academic Staff, and Sustainability, Universitat de Valéncia | 18.05.2017 |
| 3 | Coordinator of Environmental Improvements in University Buildings Team, CRUE (Coor_Envir_Buil.) | Professor and Vice-Chancellor of Campus, Services and Sustainability, Universidad de Cantabria | 02.05.2017 |
| 4 | Coordinator of Mobility and University Team, CRUE (Coor_Mob.) | Head of Planning and Management Mobility Unit, Universidad Autónoma de Barcelona | 19.04.2017 |
| 5 | Delegated of the President of CREUP (DPrest_CREUP) | Universidad de Córdoba | 25.04.2017 |

*Table 12: List of Interviews and participants*

Note: Elaborated by the author.

### 3.2.4 Topic Modeling

This study used topic modeling, which is a text analysis method often applied in social sciences, humanities, and beyond. Thus, topic modeling provides an automated procedure for coding the content of a very large corpus texts into a set of substantive, meaningful coding groups called "topics" (Mohr & Bogdanov, 2013). This uncovers topics that a researcher might not otherwise have seen using hand-coding methods. The researcher can discover patterns in their much larger collections than is possible by hand (DiMaggio, Nag, & Blei, 2013). Topic modeling is an unsupervised machine learning technique which provides a statistical solution, flexible components for modeling, scalable algorithms, and increased access to massive datasets (Blei, 2012). The term topic modeling uses the model of Latent Dirichlet Allocation (LDA) as a statistical model of document collection that tries to capture this intuition (Blei, 2012).

> LDA and other topic models are a part of the larger field of probabilistic topic modeling, a suite of algorithms that provide statistical solution to analyze the words of the original texts to discover the themes that run through them, how those themes are connected to each other, and how they change over time (Blei, 2012, p. 77).

Consequently, with a compilation of documents as input, topic modeling can identify a set of interpretable "topics" or bag of words that are associated under a single theme. LDA produces a set of topics, and for each document estimates its proportion and to which topic each observed word is assigned. It also analyzes theses various word bags to determine word co-occurrence patterns across the corpus, and then uses these results to define a map of the distribution of words into topics and then topics into the bags (DiMaggio et al., 2013; Mohr & Bogdanov, 2013). Along this line, the output produced

by LDA captures terms that are prominent within a topic and those topics that tend to occur in documents together more frequently than one would expect by chance. The interpretability attributes are the distribution of terms related to the topic.

Figure 22 describes a more formal LDA model; each node is a random variable that is labeled according to its role in the generative process. The hidden node–topic proportions, assignments, and topics are unshaded. The observed nodes, the words of the documents, are shaded. The rectangles are in "plate" notation, which denotes replication. The N plate denotes the collection of words within the documents, whereas the D plate denotes the collection of documents within the given collection. The latent parameter space, therefore, consists of β (the word-by-topic distribution), θ (the topic-by-document), and Z (the topic indicators of each word in the corpus); furthermore, α denotes the priors on the topic mixtures of the document (word–topic distributions) (Blei, 2012; Blei, Ng, & Jordan, 2003).

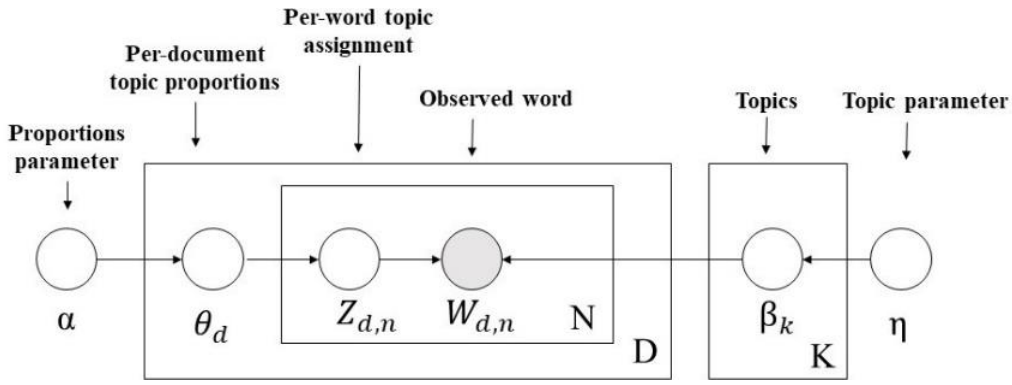


*Figure 22: Graphical model for LDA.*
Source: (Blei, 2012).

The researcher selected Topic Modeling because it provides a large-scale social phenomenon that previously would have been difficult to observe because of the amount of data. As a result, topic modeling could be compared to a macroscopic lens, which

produces textual abstraction of large trends and patterns from large quantities of data, and moreover, it can shift to a microscopic lens for viewing small-scale structures (Shawn Graham, Milligan, & Weingart, 2016). Taking this into account, a crucial feature of this method is the effectiveness in the way it analyzes big-data texts, in this case highly adequate for the 41,316 news articles downloaded from the MyNews database (Mohr & Bogdanov, 2013). This method allows organizing a collection of media articles in a systematic process with specific parameters to identify a hidden structure, and furthermore, it is an increasingly useful tool for analyzing large unstructured text collections (Wallach, Murray, Salakhutdinov, & Mimno, 2009). In fact, this statistical model describes the way that topics are formed.

One implication of this method is that researchers must possess expertise on the phenomena under investigation because they must be able to recognize when a set of topic word clusters produced by the algorithm are worthless or misleading to improve parameters. The topic modeling output provides automatic text analysis allowing researchers to view a relevant textual corpus in a different light and at a different scale (Mohr & Bogdanov, 2013). Therefore, the researcher is required to shift over the post-modeling phase of the analysis to interpret and find the best fit of the number of topics and parameters and label them.

Thus, I used the open software R by Gentleman, Robert, Ihaka, Ross, Bates, D, and Others (2009) in the interface of RStudio (Team, 2015). The package[5] used was *topic models* which provides an interface to the code for fitting an LDA model and a Correlated

[5] A package bundles together code, data, documentation, and tests, and is easy to share with others. There were over 6,000 packages available on the Comprehensive R Archive Network, or CRAN, the public clearing house for R packages (Wickham, 2015)

Topic Model (CTM), where correlations between topics are allowed with the Variational Expectation–Maximization (VEM) algorithm implemented by Blei and co-authors, a code for fitting an LDA topic modeling with Gibbs sampling (Hornik & Grün, 2011). In this manner, the CTM model and VEM algorithm provide an already fitted topic model to initialize the estimation; users can provide their own fit functions to use a different estimation technique or fit a slightly different model variant and specify them; this is called an argument model.

Furthermore, I used the package *tm* (Meyer, Hornik, & Feinerer, 2008), which provides infrastructure for creating a corpus and transforming it into a document–term matrix, which is the input data for running the *topicmodels* package. Additionally, the researcher improved the *tm* dictionary's Spanish stopwords list (very common terms such as articles, conjunctions, or forms of the verb "to be") to clean irrelevant terms that made noise in the analyses or might contain much unimportant meaning to have a cleanly formed corpus.

#### 3.2.4.1 Data collection

Before the data collection process began, the researcher defined main parameters to retrieve news articles from local newspapers that contained sustainability themes related to universities. The MyNews database was selected as an adequate source because of the number of local media outlets contained therein; in fact, this database is one of the few databases that includes most of the Spanish newspapers and press agencies. It includes editorial data since 1996 (My News, S.L, n.d.). At the time of data collection, it provided 1,285 media outlets at the national level. Moreover, the Universidad Carlos III de Madrid, the university partner in the project, had access as part of their virtual library.

In addition, it allows numerous articles to be conveniently downloaded into an Excel spreadsheet. Although the inclusion parameters were the keywords "sustainability" and "university" because they were regarded as a broad representation of the theme, as part of the definition of keywords, the addition of keywords such as "energy," "transportation," "water," "waste," and "recycle" was tested. However, I learned these extra keywords could be a limitation in the amount of data collected during the first scan, because in some months the outcome only included five to ten articles. Therefore, to gather big data, it was more suitable to have only two keywords.

Once the keywords were defined, the next step was to establish the time range, which was selected because many crucial events were related to the theme under research; this aspect is addressed further in the following subsection. Articles were downloaded and screened manually to ensure that they fit the inclusion criteria, taking into consideration the headlines of the news articles. In other words, the researcher scanned through the lists manually to ensure the headlines were part of the scope.

Regarding the number of topics, according to Krestel, Fankhauser, and Nejdl, (2009), the number of latent topics must be defined in advance and allow for adjusting the degree of specialization of the latent topics. To select an adequate number of topics that would better fit the corpus, the algorithm was applied at intervals of 10, 15, 18, 20, 25, and 30 intervals, and the results were compared. According to S. Graham & Blades (2012), there is no way of predetermining the "best" number of topics; instead, the composition should be analyzed many times until the topics to are distributed to documents that do not clump too heavily. The final decision was 20 topics, which included 20 terms in each bag of words. Hence, the expertise was also considered of the author and researchers from the working group in sustainability who had extensive

experience, and additionally, other authors' contributions were from Chae & Park (2018); DiMaggio et al. (2013); Jaworska & Nanda (2018); and Rodriguez-Pomeda, & Casani (2016), who had also applied topic modeling in their studies.

*Corroboration of the Result*

In connection with the results obtained from topic modeling based on R, the document collections were run through the software MALLET 2.0.7 (Andrew Kachites, McCallum, 2002) for LDA analysis. MALLET is open-source and designed for text classification and information extraction. It includes tools for sequence tagging for applications such as named-entity extraction from the text (Mimno, 2002). According to Jaworska and Nanda (2018), MALLET is becoming a standard topic modeling tool used in social sciences and digital humanities, and it has fixed algorithms.

Furthermore, open source software is versatile and intuitive to use. In fact, the researcher had some previous experience working with the software in similar studies, which analyzed the perceptions of students from Spanish universities about energy and transportation sustainability and applied the probabilistic topic model with MALLET. This method identified 10 main topics describing students' concerns on transport modes, renewable energy, and alternative transportation modes (Pomeda, Aldaz, Hamón, Fernández, & de Navarrete, 2016). For this reason, MALLET was considered an opportunity to test and compare the results.

MALLET was implemented following the procedure of Shawn Graham et al., (2016). First, the software was installed and run in Windows; after it created the environment variable to start working the commands, the input used was the same file used with R. The purpose of using MALLET analysis was to corroborate the results obtained because both software packages used the topic-modeling algorithm.

Consequently, this process helped to review the direction of the results, with both outcomes being highly similar and adequate for the number of topics.

#### 3.2.4.2 Sample

The corpus comprised 1,285 Spanish media outlets from the MyNews database; they included local, national, and regional coverage between January 2014 and June 2017, for a total of 42 months. This period was chosen to have 3 years in the series and the last year, until the month that the partner university had the rights to use this database from their online library.

Moreover, in recent years, many significant events related to sustainable development and climate change have brought attention to policy-makers, government, and key actors in society; in general, it is a new era of transformation. For example in 2014, the UN Climate Change Conference COP22 was held, and a transitional moment began when Agenda 21 ended and the new agenda "Transforming our world: the 2030 Agenda for Sustainable Development" was introduced at the UN Sustainable Development Summit of 2015. Moreover, in the same year (2015), the Paris Climate Change Conference COP21 was held, where 195 countries adopted the first universal, legally-binding global climate deal. Furthermore, in 2016 the UN Climate Change conference COP 22 was held in Marrakech, and finally the UN Ocean Conference was held in 2017.

## 3.3 Summary

This chapter has described in detail the procedures followed by the mixed-methods design; it provided the value of the three central RQs that guided the direction of

the study. Additionally, the researcher introduced sub-RQs for higher specificity. Thus, a mixed-methods discussion defined the core characteristics and suitability of an explanatory sequential approach in the first and second phase of the study, with a starting point of a quantitative technique to complement the second phase, which employed the qualitative techniques of focus groups and in-depth interviews. The third phase of the research continued with the quantitative method of topic modeling. This last approach included a strategical stakeholder as mass media at the national level to be interpreted as public opinion to be formed. Added to this, the results attempt to provide meaningful and understandable information toward sustainability challenges in universities to orientate the management system to be able to adapt to this dynamic ecosystem.

In Chapters 4 and 5, I present the results organized according to the RQ logic. First, Chapter 4 introduces the methodology applied for each case and then develops the findings of the perception of primary university stakeholders. Next, Chapter 5 arranges in further detail the procedure followed to identify society's opinions of university and sustainability topics in mass media.

# CHAPTER 4: STAKEHOLDERS' KEY PERCEPTIONS AND PARTICIPATION ON SUSTAINABILITY IN SPANISH UNIVERSITIES

# CHAPTER 4: STAKEHOLDERS' KEY PERCEPTIONS OF AND PARTICIPATION IN SUSTAINABILITY IN SPANISH UNIVERSITIES

This chapter sequentially discusses the results that emerged from the first and second phases of the study. The main research objectives approached in this chapter are to identify the perceptions of stakeholders about sustainability in Spanish universities as well as to understand the integration of stakeholder participation in university management models to develop policies toward SD. For this purpose, the structure of this chapter is divided into two parts; each section introduces results corresponding with themes explored within first and second central RQs. The results are organized by groups of stakeholders, including quantitative and qualitative data. The chapter concludes with a summary of the results as a precursor to the broader discussion in Chapter 6.

## 4.1 Chapter objectives

The main theoretical premise behind Chapter 2 (the literature review) was introducing the relevance of stakeholder participation in sustainability and development in university communities. Freeman et al. (2007, 2018) explained the stakeholder intelligence model, which provides a better relationship between key actors and a competitive edge. In this case, I provided special attention to *Stakeholder Behavior and Perspective Analysis* and *Current and Potential Stakeholder Contributions* because of the gap in the literature identified and the potential and unique tools for uncovering important information and unlocking new sources of value creation. From this perspective, the following RQs of the study are focused on in the prominent literature review of sustainability in universities presented in **Chapters 2** and **3**, especially the last one that

explained in more detail the six main factors as a basis for the quantitative and qualitative questionnaires. Along this line, the main RQs addressed in this chapter are as follows:

**(RQ1) What are the key perceptions of stakeholders about sustainability in Spanish universities?**

To analyze stakeholders' opinion about sustainability in their universities, I determined six main factors to conduct the approach: *(1) Framework, (2) Assessment of universities' sustainability commitment, (3) Promoting environmental sustainability in society through the mission of the university, (4) Environmental management on campus, (5) Knowledge and assessment of universities' performance, (6) Principal barriers to introducing sustainable actions at universities.*

Therefore, I attempted to answer "*What is the mission of a sustainable university in Spain"* considering the connection of teaching, research, and being an active interface in local and global communities addressing sustainability issues (Wals, 2014). Thus, the second sub-research question "*What are the most significant sustainable themes among universities for stakeholders?"* seeks to understand stakeholders' main interests, concerns, and assumptions, providing a systematic basis for connecting with the management process.

Additionally, many authors have provided a variety of models to introduce sustainability and development in universities. **Chapter 2** presented a section of "Sustainable University Role and Models," which was linked to the fourth main factor, *Environmental management campus,* allocated to the sub-RQs "*What are universities doing for sustainable development and how are they performing?"* and "*What must be done in universities to be (more) sustainable?"* Therefore, stakeholders could assess the current situation at their campus and include their potential contribution.

Another aspect considers *the main barriers and challenges to implementing sustainable development in Spanish universities from the stakeholders' perspective.*

Furthermore, after identifying stakeholders' perceptions, the second part of this chapter answers **RQ2, "How can direct stakeholder participation be integrated into the university management model to implement policies toward sustainable development?"** Considering that universities are dynamic organizations with specific characteristics, I encouraged identifying stakeholders' contributions to achieving the universities' objectives through the first sub-question "*Do the stakeholders have some knowledge of their universities' sustainable initiatives?"* as well as the last approach of the role of the stakeholders in the management system "*How do stakeholders participate in universities' management and play an active role in the pursuit of sustainable development?"*

Additionally, in the discussion chapter (**Chapter 6**), I suggest recommendations for HEIs and policy-makers to consider a stakeholder approach in the management system toward SD.

## 4.2 Methodology and Data Collection

This section presents the three techniques used in an explanatory path; the first is the exploratory quantitative survey to characterize individuals, trends, and differences among respondents. To continue with qualitative techniques, focus groups and in-depth interviews were critical for consolidating the findings and articulating attitudes and behaviors to deliver a social interlocution in the university management model.

The software package used for analyzing quantitative data was SPSS 23 and that for qualitative data was MAXQDA 2018. For the qualitative analysis, the researcher

established a coding system (Table 13) based on the experience through the collected data and literature review.

| Nº | Code | Sub-code |
|---|---|---|
| **1** | Initiatives to be implemented | |
| **2** | Universities' key strengths | |
| **3** | Accountability and metrics | |
| **4** | Communication channels/get the environmental message across | |
| **5** | Role of the university in society/impact | |
| **6** | Toward the SDGs | |
| **7** | Governance and public policies | |
| **8** | Barriers and challenges | To approach the university community |
| | | Other priorities |
| | | Resistance to change |
| | | Lack of integrated strategic planning |
| | | Lack of autonomy in public administration |
| | | Financial factor |
| **9** | Environmental impact | |
| **10** | General understanding of a sustainable university | |
| **11** | Academic dimensions | Researching |
| | | Teaching and curricular |
| **12** | Eco-campus operations | Environment conservation and settings |
| | | Waste |
| | | Mobility |
| | | Energy |
| | | Water |
| **13** | University community awareness | Neutral |
| | | Negative |
| | | Positive |
| | | Teacher/Admin participation |
| | | Citizen participation |
| | | Student participation |
| **14** | Institutional commitment | Key actors' (Uni. Authorities) commitment |
| | | Funding |
| | | Policies |
| | | Strategic Planning |

*Table 13: Coding System.*

Note: Elaborated by the author.

### 4.2.1 Descriptive Statistics: Exploratory Survey

In the first stage of the project, the researcher proposed questionnaire surveys as an initial point to target Student Representatives, academic experts, Environmental Managers, and Social Councils. The questionnaires included the six main factors previously explained; the first questionnaire was for Social Councils with 34 questions; the second survey was for Student Representatives with 46 questions; the third was for academic experts with 47 questions, and the fourth was for Environmental Managers with 38 questions (in Annexes 3, 4, 5, and 6 you can find the model of every questionnaire).

Regarding the responses, there were 46 from Social Councils from 11 autonomous regions, with the highest portions being from Andalucía, Canarias, and Castilla y León (the name of the universities were under anonymity). The most relevant results related to the role of Social Councils were 34% representatives of social interest foundations and corporate partners, 30% secretaries, and 19% representatives of the university community.

Furthermore, there were 314 answers (39.8% female, 60.2% male) from Student Representatives from 44 Spanish universities; some of the universities with the highest proportion of answers were Universidad de Navarra, Universidad de Valladolid, Universidad Jaume I, Universidad Autónoma de Madrid, Universidad Complutense de Madrid, Universidad Politécnica de Madrid, Universidad Politécnica de Valencia, and Universidad de Extremadura.

Concerning academic experts, there were 26 answers, 50% female and 50% male. The group comprised 70% professors and researchers, and 19% had an administrative role. They belonged to 16 universities; it was not mandatory to provide the name of the universities.

Finally, there were 25 answers from Environmental Managers, 40% female and 60%, and 40% of the respondents had administrative positions and 60% were researchers and/or professors who collaborated with the environmental management of their universities. They were from 13 universities (not mandatory to answer which).

### 4.2.2 Focus Groups

The researcher organized seven focus groups; five were with Student Representatives, one was with Vice-Chancellors, and one was with Environmental Managers. The Student Representatives who participated were active students who belonged to different student associations, such as CREUP, and others in their faculties. However, they also included students of the Government Council and Student Representatives in Madrid of SDSN Youth. Regarding the Vice-Chancellors, the participants were the Vice-Chancellor of Undergraduate Studies, Vice-Chancellor of Sustainability and Campus, and Vice-Chancellor of Strategic and Planning from the UAM. The final focus group was with an Eco-Campus Manager, Leader of Environmental Participation, Leader of Electric Cars on campus, and an Infrastructure Manager.

### 4.2.3 In-Depth Interviews

The target interviewees were high-level experts who could provide more detailed facts to answer the central RQ as well as provide their point of view. The researcher conducted five interviews with the (1) President of the Assessment team for Sustainability in the CRUE, (2) Executive Secretary of the Sustainability Commission of the CRUE, (3) Coordinator of the Environmental Improvements in University Buildings Team from the CRUE, (4) Coordinator of Mobility and University Team from the CRUE,

and (6) the Delegated of the President of the Association of Student Representatives of Public Spanish Universities, CREUP.

## 4.3 Findings

The current section presents the results divided into two sections: the first part introduces "The Key Perception of Stakeholders About Sustainability in Spanish Universities" organized by different stakeholders groups, whereas the second part introduces "The Integration of Direct Stakeholders' Participation in the University Management Model to Implement Policies Toward Sustainable Development."

### Part I – The Key Perception of Stakeholders About Sustainability in Spanish Universities

The focus of this section is to provide an analysis of the most dominant themes revealed in the quantitative questionnaire survey and the qualitative discussions over the focus group and depth interviews. They are merged to describe complementary findings approaching the mission of the university, the most relevant themes for stakeholders and environmental management at universities, and universities' main barriers and challenges to implementing sustainability.

#### 4.3.1 Promoting environmental sustainability in society through the mission of the university

##### *Social Councils*

Focusing on the main pillars of universities (academia, research, and engagement with society), the majority (76%) of Social Councils agreed that universities should

conduct periodic reviews and modifications of teaching systems to incorporate or update contents related to environmental sustainability topics. Regarding teaching activities, the same percentage (76%) thought that HEIs should conduct activities to encourage students to develop behavioral competencies toward the environment. Along the same trend, 72% agreed on the importance of creating or promoting specific institutes for the environment and sustainability. Finally, 71% considered that their universities should issue and disseminate research activities on sustainability among society.

***Student Representatives***

For Student Representatives, the most relevant factor (78%) was that HEIs should create or promote specific institutes for the environment and sustainability. Additionally, in the same trend, 72% of respondents agreed that their universities should issue and disseminate research activities on sustainability among society, and 70% believed that HEIs should conduct teaching activities to encourage students to develop behavioral competencies toward the environment. A slightly lower percentage (61%) of students acknowledged that HEIs should conduct periodic reviews and modifications of teaching systems to incorporate or update contents related to environmental sustainability.

In the qualitative analysis, the codes of academic dimensions provided evidence that in some careers, there are few academic contents on environmental impacts or CSR in particular subjects, as well as the faculties' offer on sustainability lectures, or seminaries. However, a majority of Student Representatives claimed that there is a lack of inclusion of sustainability in the subjects; one participant mentioned that "professors usually skip the sustainability topic, which is part of the academic program" (FG1). In the same context, students admitted the relevance of translating sustainability from a theoretical approach to practical actions: "a special distinction that must be in a

university" (FG1). Moreover, the idea of introducing a sustainability theme as a supplementary subject was latent; a negative reaction was mainly from the students who were against demanding more theoretical content. By contrast, other participants from FG5 mentioned "a strategic way to approach students is to introduce in the curricula as a mandatory subject because all current studies are crucial for the next 10 to 15 years to determine our future." Thus, the need for continuous adaptation of educational program was evident to be able to deliver a solution for new challenges.

On the other hand, students commented on a deficit of information on research projects and academic activities in this area; some faculties are more focused on traditional themes of their field than on encouraging innovation among students.

***Academic Experts***

Due to the proximity of academic experts to the current factor, 96% of participants agreed that HEIs should conduct periodic reviews and modifications of teaching systems to incorporate or update contents related to environmental sustainability. Thus, with the same percentage as the previous item, participants agreed that universities should carry out teachings activities to encourage students to develop behavioral competencies toward the environment. Of less interest, 89% and 88% of participants respectively recognized that HEIs should issue and disseminate research activities on sustainability among society, as well as creating or promoting specific institutes of the environment and sustainability.

Regarding the point of view of Vice-Chancellors during the focus group, they highlighted the previous years' progress to acknowledge the inclusion of sustainability in government agendas. A participant mentioned that the SDGs incorporate a broad scope, which is involved in the majority of the university's degrees; however, it was not

explicitly identified in the academic programs, and it was important for students to note in their teaching guide to understand its outreach. An interviewee added, “We cannot allow students to not acquire knowledge and behavior guidelines toward environment respect” (IT1). Another interviewee contributed, “where we have least advanced is in curricular sustainability, the implementation of sustainability content in degrees and research is very slow, to promote projects in this area from the universities and the Ministry” (IT1).

Thus, they also mentioned there are skill programs and training courses for students and teachers; nevertheless, the information is unclear and scattered in every faculty and program.

In conclusion, the perceptions of Student Representatives and Social Councils were highly similar, with a slight difference being the academic experts in terms of the percentage of agreement in each factor. However, it was evident that the vast majority of stakeholders agreed that universities should organize sustainability activities to encourage students to develop skills related to environmental behavior. Moreover, stakeholders indicated the lack of outreach research activities on sustainability among society, as well as the relevance of creating and promoting environmental sustainability institutes or centers. Despite the fact of a latent statement to incorporate and update teaching content yield to sustainability, students acknowledged the value to their careers but in a more practical approach than theoretical; thus, Spanish university missions are still unconnected to a sustainable environment path.

### 4.3.2 Most significant sustainable themes among universities for stakeholders

The data gathered in the first stage of the exploratory study through the survey questionnaire included a factor regarded as *Framework* with the purpose of obtaining the respondents' general knowledge about sustainability and environmental issues. The outcome highlighted the great importance of environmental conservation for social councils, represented by 89%. Moreover, 76% of respondents thought that universities should become involved in environmental sustainability issues. On the other hand, when I asked their opinion on how they would rate the quality of the Spanish environment, only 24% answered "good," with the majority of the remainder of answers being "neutral" and "fair."

Regarding the Student Representatives, 90% thought that environmental conservation is important and 86% considered their universities' involvement in these issues to be crucial; however, just 16% of students rated the Spanish environment as being of good quality.

Regarding the academic experts, 96% confirmed the great importance of environmental conservation and 88% thought their universities should get involved in environmental issues. Moreover, 68% of academic experts thought that the quality of the Spanish environment is good.

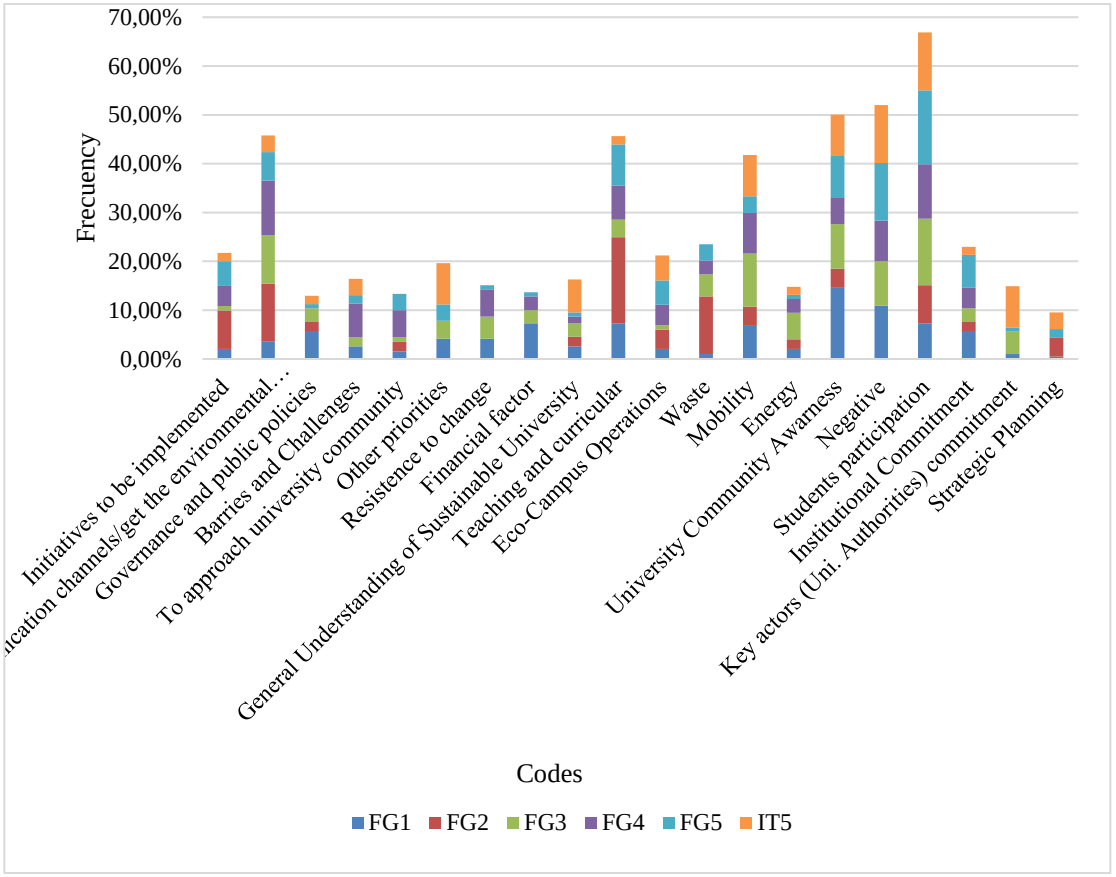


*Figure 23: Most relevant codes per group for Student Representatives.*

In the qualitative analysis, results indicated the six most relevant themes for students (Fig. 23). The first was university community awareness with a frequency of 50%, which contained two other sub-topics that redefined a 52% frequency in a negative context and 67% student participation. The fourth theme was teaching and curricular with a frequency of 46%; the fifth was communication channels to get the environmental message across with a frequency of 46%; and finally, the mobility sub-topic as part of an eco-campus operations had a frequency of 42%.

A closer look at university community awareness, which has two sub-topics (student participation and negative implications), shows a low level of students' attention on sustainability actions such as recycling, energy consumption, and sustainable mobility

in their daily activities. Furthermore, they claimed to be insulated in their academic responsibilities and not commited to contributing to another aspect of the campus. One participant mentioned, “The thing is that we are here X years and what interests to us is that tuition fees do not increase and basically studying; what matters to me is having studied” (FG3). In a negative nuance, a Student Representative said, “Honestly, the average student is only interested in improving their subjects” (FG3).

Hence, sustainability occupies the last positions in student agendas; they prioritize other activities rather than becoming involved in pro-environmental actions. A Student Representative at the national level claimed, “We as representatives of many universities do not prioritize sustainability because we understand that there are other aspects that society is more interested in” (IT5).

Along similar lines, students explained their lack of motivation was caused by perceiving that authorities do not assume this topic as important; for example, “a change of model thinking toward sustainability, a culture of sustainability, may be the step to encouraging the university community to participate in this process” (FG5).

In this context, as part of the academic dimension, teaching and curricular topics were mentioned very frequently, as was the immersion of sustainability themes as an important requirement in their professional preparation, and inserting this theme into a practical approach rather than theoretical lectures in their career programs. This content was also broadly discussed in the previous section of “Promoting Environmental Sustainability in Society through the Mission of the University.”

To continue, the fifth most relevant theme for students was the communication channels to get the environmental message across; students recognized a general problem with the communication strategy. There was distortion with the use of emails from the

part of the university managers; the large amount of information that students received daily has become irrelevant and students claimed to be uninformed. For example, “relevant information should be closer to students, for example, through professors or during lectures” (FG2). There are many initiatives that students do not learn anything about during their years spent on campus; for example, “I don’t know, the reality of the day to day is not noticed, the actions are done, but do not reach the community. There is a lack of diffusion at all levels, students, teachers and everywhere” (FG5). Consequently, a horizontal perspective, students to students, should be introduced to work together with student associations and Eco-Campus Officers.

Finally, regarding the sixth theme of mobility, a sub-topic that belongs to the main topic eco-campus operations, students translated their understanding of sustainable mobility to public transportation, car sharing, and bike options. They contributed that a determinant factor for deciding their commute mode was the university’s location, whether it is urban, suburban, or rural. They also indicated the importance of an excellent public transport system; one participant mentioned, “Sustainable, I understand public transport, more than I value it, it is quite comfortable, cheap, but it has many errors; for example, the train is sometimes 10 minutes delayed and it is very busy. I think people appreciate it, but it’s underdeveloped” (FG4).

Moreover, the majority of students agreed that awareness is missing and people are not yet ready to shift to a sustainable commute mode; they suggested that universities and government should work together to implement sustainable policies, which must be the key driver for people to make an extra effort.

In this perspective, academic experts mainly agreed with Student Representatives in some relevant themes. Figure 24 presents the trends: university community awareness with a

frequency of 36% and teaching and curricular with 33%. Nevertheless, strategic planning sub-code as part of the institutional commitment main code had 26% relevance. Thus, one of the biggest challenges is to improve awareness not only in students but also in other groups of stakeholders such as professors and administrative staff.

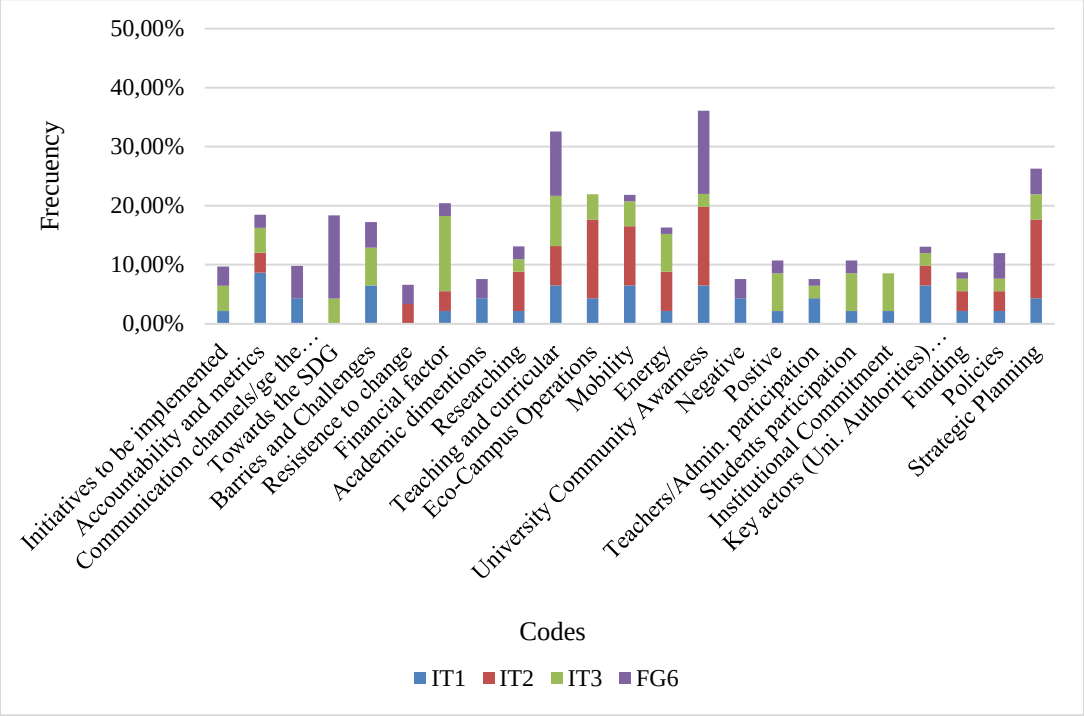


*Figure 24: Most relevant codes per group for the academic experts.*

Similarly, regarding the teaching and curricular theme, an interviewee declared, “I believe that training and awareness are what makes us act in a future generation; I believe training is fundamental” (IT2). Hence, strategic planning is crucial in terms of management initiatives and actors to follow a guide that reflects actions and objectives, which may translate these activities into figures. However, sustainable planning is disconnected from the university’s strategic plan; an interviewee mentioned, “My opinion is that CRUE sustainability is an NGO. It is true that it has many influences in

universities. Many times the strategy of universities doesn't include our work done, and it is true that there is a great will to implement and follow recommendation in universities, but sometimes this work does not take place in the long and permanent term" (IT1). Furthermore, the importance of managers and authorities' role was recognized for integrating a sustainability plan in the strategic master plan of universities, aligning resources toward an overall mission. A respondent said, "The participation of sectors within the universities is a voluntary exercise so that you can find an external point of view, the participation of universities is linked to personal affinities" (IT3). This evidence raises a compromise for sustainability in the DNA of the universities and government.

Regarding the last group of stakeholders, Environmental Managers, Fig. 25 shows the remaining stable frequencies on many topics, yet the mobility aspect only has 29% prevalence, which belongs to the eco-campus operations main topic. They gave special attention to mobility because it was one of the earliest initiatives implemented in many Spanish universities; it has become an institutionalized activity, essentially coordinated with city halls as a community matter. One interviewee believed, "the key is the need for everything; in our campus, the need is more intense than an urban campus where the city hall solves mobility like parking, bus, or tram issues. On our campus the key is the location, we are on the outskirts, and we are a very large university with a very big budget; however, let's say we are a little careless on mobility. Then it was the university itself that had the leadership solve those issues" (IT4). In summary, mobility is a constant theme for this group, being an emblem of their work despite a slowly changing process.

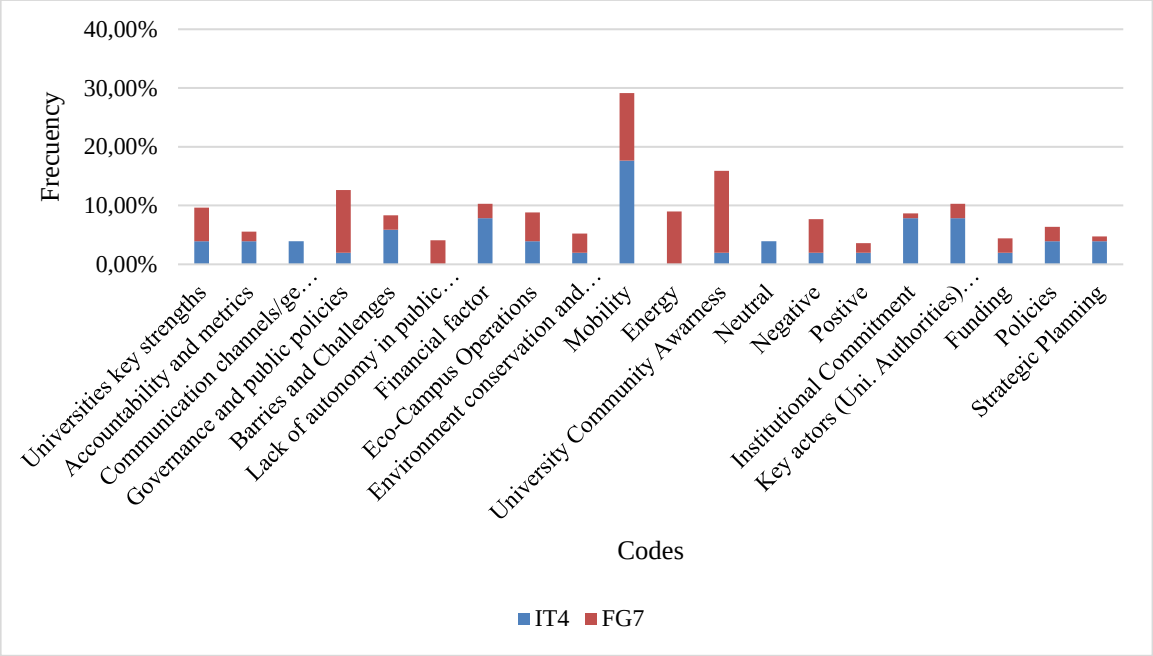


*Figure 25: Most relevant codes per group for Environmental Managers.*

To conclude, in a general framework, stakeholders showed the main attention in environmental conservation themes according to the quantitative data. Furthermore, other aspects of great concern in the conversations were university community awareness in a negative context and student participation, as well as teaching and curricular, communication channels to get the environmental message across to the community, and mobility as part of eco-campus operations. In particular, academic experts highlighted strategic planning as part of institutional commitment.

### 4.3.3 Environmental management at universities

#### 4.3.3.1 What are universities doing for sustainable development and their performance?

Reflecting the opinions of Student Representatives, universities have strengths in terms of digitalization; there are academic activities that can be considered eco-friendly,

such as the use of laptops instead of notebooks, homework presentation, and exams through the Moodle platform. One student agreed that, “It is true that technology is used a lot in the universities, and it does save a large amount of paper compared with high school” (FG2).

Another important factor was the settings of the universities, the difference being a campus downtown compared with being on the outskirts surrounded by green areas; some students even agreed on the great influence of this factor for choosing the university; therefore, a participant mentioned, “The good maintenance of a campus invites you to respect it more” (FG2).

Nevertheless, students believed there were no lines or a specific plan to boost sustainability actions; the authorities’ will is crucial to delivering an impact in the community. Private vehicle use is one of the most latent concerns, together with recycling and energy consumption. At the same time, they appreciated having an Eco-Campus Office; however, its function were unclear for this group of stakeholders.

In this connection, academic experts confirmed their satisfaction in the advances in this area, especially in environmental management, waste control, energy consumption, energy and water resources, and risk prevention. However, in the last few years, universities have been implementing the concept of a healthy university through training and improving the quality of food in canteens and vending machines. One interviewee agreed that, “Much work has been done, I think we are progressing considerably and we are fostering healthy things, but there is still a way to go. We are progressing” (IT2). On the other hand, mobility is still an issue linked with community awareness. Teaching and curricular areas are weak, as is research; there is a lack of support for sustainable projects from the universities and the relevant ministry.

On the top of this, in the quantitative survey (the *Assessment of Universities' sustainable commitment)*, the Environmental Managers responded as follows: 56% of participants agreed that their universities included environmental sustainability indicators in their strategic plan and scorecard. However, 44% of participants claimed that these indicators are public and easily accessible. Very similarly, 42% answered that their universities report accountability documents, including environmental and/or social aspects, which are publicly available too. However, in a different direction, 64% of participants thought that their universities rarely or occasionally endorse international and national declarations on social and/or environmental aspects, and the same proportion thought that these aspects are rarely or occasionally a priority with corresponding budgetary effort.

Additionally, Fig. 26 introduces the results of the Environmental Manager survey, in which they assessed their universities' performance as very good or excellent in terms of sustainable policies and activities in the following aspects or indicators: 64% in waste, 48% energy, 44% green procurement, and 40% environmental policies; however, the main deficiencies were in research, transfer of knowledge, and teaching. Moreover, 32% of respondents claimed their universities have energy auditing and centralized air conditioning management systems as main initiatives; these results were also affirmed during the focus group as well as interviews where they remarked on the improvements in energy consumption, biodiversity conservation on campus, and the great advantage in terms of air quality because of some universities being located in suburban areas.

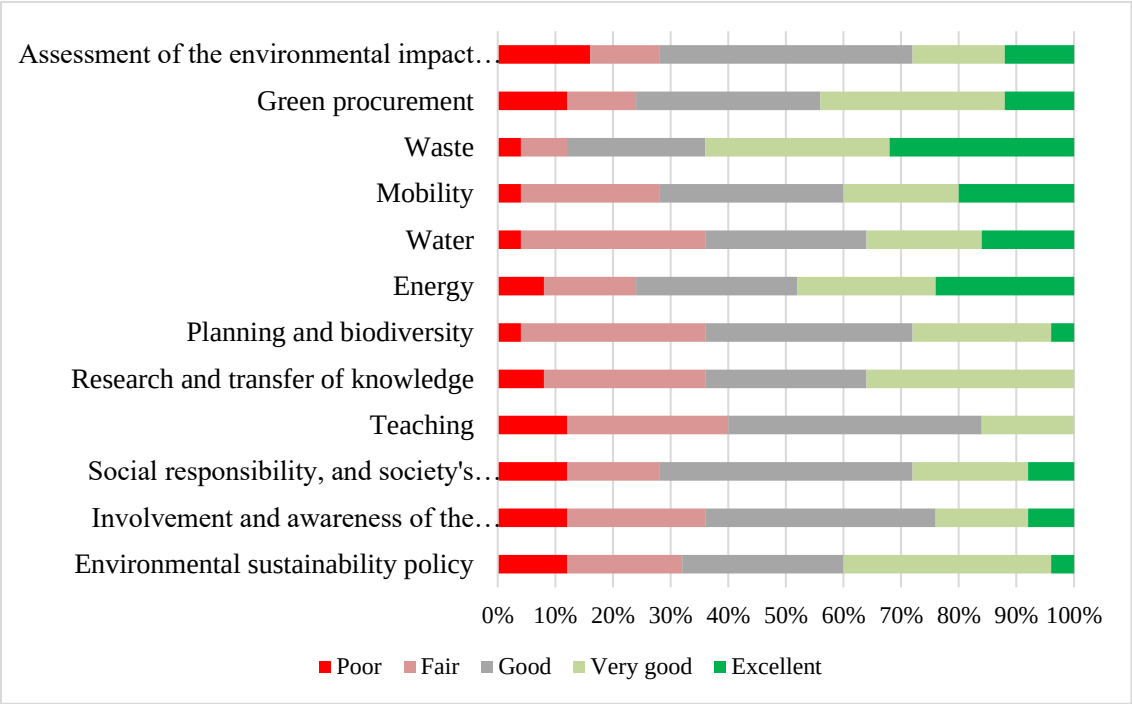


*Figure 26: Sustainable policies and activities according to environmental managers.*

In this context, through the interviews, they also highlighted the relevant role played by the government, which has implemented policies and laws toward environmental conservation; thus, most of the initiatives in many universities have been made because they are mandatory. This regulation has been the key to maintaining minimum sustainable criteria to manage the campus, but the evidence indicates that a further commitment to achieving the next steps is missing. A participant agreed that, "The standard is high, the only thing that remains is the will of the university, the awareness of expenses, nothing else" (FG7).

In summary, this section introduced the opinions of Student Representatives and Academic Experts on the current initiatives in universities, where the main strengths were digitalization and the great influences of campus' settings, environmental management, waste control, energy and water consumption, healthy universities, and risk prevention.

Controversially, there was a latent concern for private vehicle use and teaching and curricular areas. Additionally, Environmental Managers agreed on the very good performance of their universities in waste, energy, green procurement, and environmental policies, as well as some deficiencies in research, teaching, and transfer of knowledge.

#### 4.3.3.2 What must be done in universities to be (more) sustainable?

***Social Councils***

*Assessment of universities' sustainable commitment:* The second main variable included questions related to the strategic management of HEIs introducing environmental sustainability factors: 76% of Social Councils considered that HEIs should endorse international and national declarations in social and/or environmental matters. Furthermore, a similar percentage 65% believed that environmental sustainability should be a priority with a corresponding budgetary effort for HEIs. Along the same line, 73% agreed on the importance of reporting accountability documents that include environmental and/or social aspects, as well as them being publicly available. In this connection, 76% of Social Councils determined that the strategic plan and scorecard should include environmental sustainability indicators, and 78% expected these monitoring indicators to be public and easily accessible.

*Environmental management on campuses:* Related to the resources of university campuses were seven surveyed factors, where only 65% of Social Councils considered it important to have an Eco-Campus Office as a unit focusing on sustainability. Nevertheless, 74% of respondents determined the following four factors to be crucial: management procedures and reporting of environmental indicators, actions and policies for obtaining environmental certifications, ecological design plans of buildings, and

analysis of the university's impact on biodiversity and the environment (Ecological Footprint). Along this line, 85% of respondents believed it relevant to implement audits to manage water consumption efficiently. Moreover, the most significant factor with 91% of attention for Social Councils was an action protocol on waste separation for reuse and recycling materials.

*Energy efficiency and sustainable transport:* 76% of respondents considered it important to have green building redesign plans; however, 93% of Social Councils thought their universities should have a program, strategic line, or energy saving plan. Finally, 76% admitted an interest in having a sustainable transport plan at their universities.

***Student Representatives***

*Assessment of universities' sustainable commitment:* There were five variables surveyed, and for the first two questions, 71% and 72% of students respectively agreed that HEIs should endorse international and national declarations in social and/or environmental matters as well as prioritize environmental sustainability with its corresponding budgetary effort for HEIs. For the third question, 78% of respondents thought that HEIs should report documents of accountability that include environmental and/or social aspects as well as make them publicly available. Nevertheless, the most important factors for students were the inclusion of environmental sustainability indicators in the strategic plan and scorecard with 80% agreement and the importance (88%) of monitoring indicators that are also publicly and easily accessible. In this context, parties believed that universities should be coherent in their policies and strategic documents, enforcing them in their daily activities; for students, it was difficult to list evidence of what universities are achieving in their plan. They claimed not to have

information available or a easy access to a direct connection channel; thus, they contemplated the possibility that faculties could also have an active role in encouraging sustainable initiatives. For example, “every faculty could have sustainable practices and policies to apply in their actions and encourage students as well” (FG5).

“Commissions focused only on sustainability in the university are very primitive; now, they start to doing something, but still have no such commitment as other universities, I think students do not perceive these initiatives” (FG4).

*Environmental management on campuses:* A significant result in this topic was that 89% of students agreed there should be an action protocol on waste separation for reuse and recycling material. Slightly less relevant was that 78% of respondents thought audits to manage water consumption efficiently were important. Subsequently, in a similar tendency, 76% believed it important to analyze the university’s impact on biodiversity and the environment (Ecological Footprint), as well as 75% for the two following variables: the importance of management procedures and reporting of environmental indicators regarding the campus, and taking actions and creating policies to obtain environmental certifications. Finally, a lower percentage (65%) considered it important that HEIs should have an Eco-Campus Office or unit focusing on sustainability.

*Energy-efficiency initiatives:* Students’ main insights were represented by two questions, the importance of a program, strategic line, or energy saving plan and efficient energy designs in infrastructures; both cases had 89% of representation. Another important factor was promoting the use of renewable energy (wind, photovoltaic, and thermal) with 86% relevance. In a minor concern, students believed in the importance of green building redesign plans(73%), energy auditing (72%), and centralized air

conditioning management systems (70%). An additional factor was that students suggested that universities should review expenses caused by energy inefficiency and consumption on campus. For example, “it is an investment, because if you manage to reduce your energy consumption or depend less, in the end, it is something that in the long-term the university will end up saving money on” (FG1).

*Sustainable transport:* The most significant factors in this section for students had 87% and 83% representation, respectively, for the following initiatives: agreements with public transportation companies promoting sustainability and a sustainable transport plan in their universities. Furthermore, the information provided from the focus groups and interviews recognized the government policies and initiatives to solve mobility issues improving public transportation services, offering a special fee for students.

Additionally, 78% of students thought it important to reduce private vehicle use and promote car sharing or green vehicles. Similarly, 76% of participants believed in significantly promoting bicycle use on campus. Students contributed that universities and Spanish cities are not yet ready to implement green vehicles. However, car sharing was an acceptable option in their opinion, depending on the location of their universities.

Of lesser importance to respondents (61%) were pedestrianizing the campus and reducing travel costs or flexible work schedules (remote teaching or remote working), and with an even lower percentage (60%) was parking control.

Students explained the priority of universities giving special attention to community awareness through introducing skills, lectures, and practical activities through teaching in their academic programs, “to raise awareness among students to generate values within the university and later to make small changes through the need or imposition of any these initiatives” (FG5).

***Academic Experts***

*Assessment of universities' sustainable commitment:* Participants agreed with a strong majority with the five statements in this section; 92% of academic experts perceived that HEIs should report documents of accountability, which include environmental and/or social factors; furthermore, they should have a strategic plan, a scorecard including environmental sustainability indicators, and a monitoring system, all of which should be publicly available and easily accessible. However, 88% believed that HEIs should endorse international and national declarations in social and/or environmental matters, and the same percentage claimed that environmental sustainability should be a priority with a corresponding budgetary effort for HEIs. Parties believed that if universities improve and assume "sustainability" as a priority, this will impact the economic and educational aspects significantly; for example, "there are two issues that belong together, one is to have a specific budget and the other is education or training" (IT3).

*Environmental management on campuses:* All items under this factor were highly relevant for implementing in HEIs for this group of participants; special attention was paid to two questions, with 85 and 84% of the agreement, respectively, were an action protocol on waste separation for reuse and recycling materials and audits to manage water consumption efficiently. A constant rate of 81% of respondents thought that universities should have an Eco-Campus Office focusing on sustainability, management procedures, and reporting environmental indicators of the campus, to take action and create policies to obtain environmental certifications and analyze the university's impact (Ecological Footprint). Although 73% of participants agreed on the importance of ecological design plans for buildings, there was a lack of planning; many activities are implemented as

occasional initiatives by current managers. A management system is missing in an overall approach with the universities' strategy.

*Energy-efficiency initiatives:* The main concern for the academic experts was the importance of efficient energy designs of infrastructures (92%), followed by them considering it important to have a program, strategic line, or energy-saving plan (88%). Furthermore, 85% of participants agreed on the relevance of a centralized air conditioning management system and energy audits. Finally, 81% answered that universities should implement green building redesign plans and promote the use of renewable energy.

*Sustainable transport:* 93% of respondents considered agreements with public transportation companies important for promoting sustainability, and 85% highlighted the relevance of reducing private vehicle use. A lesser percentage (81%) of concluded that promoting bicycle use on campus and reducing travel costs were important, and moreover, just 77% determined parking control to be essential. Finally, only 69% thought it important to pedestrianize the campus.

Adding to this big challenge is to influence, collaborate, and educate external stakeholders to increase the level of participation of the scientific and academic community with sustainable actions in local territories, working together with local communities and governments.

**Environmental Managers**

*Environmental management on campuses:* One of the main concerns for Environmental Managers is the importance of an action protocol on waste separation for reuse and recycling materials (92%). Furthermore, 84% of responders thought it essential to have an Eco-Campus Office focusing on sustainability; however, it should be

configured within a global vision incorporating a different management scheme. A lower percentage (76%) determined it important to have management procedures and reporting environmental indicators of the campus, to take action and create policies to obtain environmental certifications, and to have ecological design plans of buildings. With the lowest rates of 72% and 64%, respectively, respondents believed it necessary to analyze their universities' impact (ecological footprint) and audits to manage water consumption efficiently.

*Energy efficiency and sustainable transport initiatives:* Marking a small difference with previous answers, 80% of managers claimed it essential to have a program, strategic line, or energy saving plan, and only 72% considered green building redesign plans important. However, 72% also considered essential a sustainable transport plan, such as the implementation of sustainable mobility policies in connection with local government support to transform the campus, removing vehicles to outside areas.

Additionally, participants believed universities should enforce rigid regulation at different levels, which makes it possible to implement initiatives on campus. However, the biggest next step to follow should be the academic aspect, to integrate environmental content into career programs to increase the awareness of the community complemented with legislation and policies.

To conclude the analysis in this part, it appears that for the different groups of stakeholders, there are recurrent themes to improve upon in the scheme of universities' commitment. The first is the importance of reporting accountability documents with monitoring indicators, as well as a strategic plan and scorecard including an environmentally sustainable vision that is easily accessible by the community. Moreover, in environmental initiatives, respondents suggested paying special attention in audits to

management efficiency water consumption, action protocols on waste and recycling, and a sustainable mobility plan with public transportation agreements. On top of this, the big challenge is influencing local communities to participate through the initiatives and increasing awareness and education.

### 4.3.4 Main barriers and challenges to implementing sustainable development in Spanish universities from the stakeholder perspective

#### *Social Councils*

The most significant barrier for Social Councils is "financial aspects" (74%), followed by the existence of "other priorities" as an important limitation at 63%, the factor of "people's resistance to change" (48%), and finally the "lack of awareness of environmental issues" with 39% representation over the remaining factors.

#### *Student Representatives*

According to students' perception, the main barrier was "other priorities" represented by 76%, followed by "financial barriers" with 60%. Furthermore, 57% of participants perceived "people's resistance to change" to be a barrier. Finally, 54% agreed on the "lack of awareness of environmental issues."

#### *Academic Experts*

The most critical barrier for academic experts was "other priorities" with 73% relevance and "people's resistance to change" with 65%. Moreover, 62% answered significant "financial barriers" and 50% answered "lack of awareness of environmental issues."

***Environmental Managers***

Similarly, the most relevant barrier for this group was 'other priorities' represented by 80% and "lack of awareness of environmental issues" at 72%. Moreover, 68% of respondents agreed that "people's resistance to change" was a barrier, and finally, 48% agreed the main barrier was "financial factors."

During the second phase of the study, the researcher identified seven sub codes as part of the barriers and challenges. Table 14 displays a summary of the three groups of stakeholders' opinions; the relevance of each factor is represented by a color, with green meaning the highest frequency, yellow meaning medium recurrence, and red meaning the lowest prevalence in their qualitative conversations.

| | Students Representatives | Academic Experts | Environmental Managers | Total |
|---|---|---|---|---|
| Barriers and Challenges | | | | |
| To approach university community | | | | |
| Other priorities | | | | |
| Resistance to change | | | | |
| Lack of integrated strategic planning | | | | |
| Lack of autonomy in public administration | | | | |
| Financial factor | | | | |

*Table 14: Most relevant barriers and challenges from a qualitative perspective.*

The results indicated the most critical barrier or challenge for these three groups of stakeholders was the "financial factor," especially for the academic experts and Environmental Managers. This last party added "resistance to change" as a crucial factor. In this context, one participant claimed, "apparently all the proposals are good, but they require an economic investment, and that is the main barrier to involve sustainability actions in the university, the necessary economic investment" (IT3).

Nevertheless, some Student Representatives noted that urgent challenges to approaching the university community was inappropriate communication channels, universities not sharing figures, information on environmental initiatives and programs not being focused on students, and how to interact to specify students role in the mission toward a sustainable university.

In sum, in the first stage of the study, Student Representatives, academic experts, and Environmental Managers agreed that the main barrier was other priorities and for Social Councils it was financial aspects. However, in the second stage of the research, the three groups interviewed recognized financial factors as critical, and the Student Representatives highlighted the challenge of approaching the university community.

**Part II – The Integration of Direct Stakeholder Participation into the University Management Model to Implement Policies Toward Sustainability Development**

This part presents the contribution of stakeholder participation in the management system of universities through their knowledge and level of information on sustainable themes based on a mixed-methods approach. Having identified their current contribution, it extends further to engage with values and culture and provide a tool for developing a stakeholder approach to achieving sustainability.

### 4.3.5 Do stakeholders have some knowledge of their universities' sustainable initiatives?

During the first stage of the study, the researcher inserted question in general terms in the framework of the questionnaire to self-evaluate whether the participants

considered themselves informed about environmental issues; 68% of Social Councils agreed to being very well informed, whereas only 39% of Student Representatives considered themselves well informed; even only 60% of academic experts believed they were well informed. This item was excluded for Environmental Managers because they are the closest group who work in these topics, and thus, their opinions would be biased.

In the second section, a further approach to stakeholders' knowledge and assessment of their universities performance, initially only 27% of Social Councils answered as having a good level of knowledge about their universities' environmental sustainability performance, and the remainder of the respondents (the majority) had a fair or neutral level of knowledge. Additionally, 26% believed that their universities do well in terms of environmental sustainability, 50% were neutral, and 24% agreed that their universities do fairly or poorly.

Student Representatives revealed a low level of knowledge about their universities' environmental sustainability performance; only 31% claimed to have a good level of knowledge in this area. Similarly, just 29% of students considered their universities to do well in environmental sustainability.

Hence, students mentioned through the second phase of the study having little information on their university's performance; they agreed that their university has initiatives such as recycling, but they had no figures to report such activities. In fact, a student commented, "I see many solar panels on campus, but I have no clue about their results or their use; it would be good to inform to the community about their utility" (FG1).

They acknowledged that universities have the word "sustainability" in their planning and policies, but in practice, few actions are taken to solve real problems. From

a student's perspective, "it would make more sense to apply (initiatives) on campus and try to teach these actions to students for application in their daily activities" (FG1).

By contrast, only 50% of academic experts rated themselves as having a good level of knowledge about their universities' environmental sustainability performance, and considered from their perception that their universities were doing well.

The participation of academic experts yielded research and academic interest; some vice-chancellors are active in internal and external committees of working groups besides their duties; their contributions are aligned with their work areas.

These were research groups with high-value information to disseminate among communities; the question is how to manage that information and organize their contribution to connect efforts from different directions.

The Environmental Managers ignored the researcher's projects linked to this theme; they recognized that academic contributions are unconnected to their operational activities; for example, "the aims are divided by the individualism of every person than the collective vision" (IT4).

One of the highlights of this section is missing knowledge on universities' performance; the majority of stakeholders believed that their universities take sustainable actions. However, these actions are not incorporated into planning and reporting; participants highlighted the importance of keeping the community informed as a strategy for awareness and engagement.

### 4.3.6 How can stakeholders participate in universities' management and play an active role in the pursuit of sustainable development?

This section provides an analysis of stakeholders' participation and role for achieving sustainability in universities, as well as the perceptions of Student Representatives, academic experts, and Environmental Managers.

Reflecting the students' point of view, a main concern exists about the role of the representative bodies of the university community, in that the sense of university campuses being a place for students has been decreasing. A gap exists in the relationship between students and the rest of the university community because of the lack of open spaces to interact between them. "It would be good if the university could become more of a place for students, that the students would feel like part of the property, that we would have a voice and vote, as well as participate more" (Participant 5, FG1).

Students stated that their daily activities on campus are traditionally academic. "The truth is that as a leader of my classmates, I do have close contact with them, but my role is more paperwork or administrative issues" (FG4).

Respondents were aware of their power as the main and most representative stakeholder among others in the university community. However, the majority of students do not want to participate in associations or groups because the universities do not encourage their inclusion; for example, "Why should I participate in an association and spend hours there? I know I will have a great time, but if the group wants to organize anything external from the association, it will be impossible" (FG5).

Furthermore, a current association claimed to have mechanisms to gather students' opinions; unfortunately, they mentioned that, "Authorities avoid our opinion" (Participant 3, FG1).

Following this connection, students could develop a great interest in sustainability if they could spend more time on activities on campus, thereby feeling more committed to the space they are in. The association could be a great place to drive students into this change. One leader contributed the following: “From the students, the association collected the peoples’ ideas from word of mouth to take to the board meetings, but sustainability topics have never been mentioned” (FG4).

Despite this, they know the importance of introducing real action; however, sustainability remains a topic that is not part of governing bodies’ agenda. A Student Representative claimed that, “It is true that as a government counselor I am in committees of many things in the university. We discuss many topics, but I have never heard the sustainability topic raised” (FG4).

In sum, there are many limitations for students concerning actions on campus; for example, “when students want to do things, it is not allowed” (FG5). Students could be the potential driver for installing sustainability actions in the community; the engagement factor is fundamental to encourage their role in a participatory plan.

The academic experts revealed a different perspective, the existence of departments, committees, and working groups with the representation of students, Vice-Chancellors, and managers oriented toward resolving actions and objectives for sustainability. Some of these groups are inside the university and others are external, such as working groups of the CRUE; this last one has great influence over universities. Nevertheless, academic experts believed the work done by these groups is not implemented in the university strategy: “It is true that there are great universities that will apply and follow the recommendation, but sometimes this work is not reflected in the long-term” (IT1). Along this line, respondents also concluded they were responsible for

disseminating the environmental message throughout the university community and fostering sustainable performance based on the agreements of sustainability working groups. They claimed the participation of students, professors, administrative staff, and services to be essential: “It must be a participatory plan based on dialog among all singularities, not an imposed plan” (FG6). A plan must be defined according to each university characteristic and dimension, generating learning spaces and situations, to be a benefit for the mission of universities.

Additionally, the Environmental Managers underlined their key role in implementing the university strategy and policies toward sustainability; they claimed to support professors, researchers, and authorities who are specialized in different areas: “Technically they are independent political workers and pioneers at operational levels. Over time they are responsible for introducing the benefits of a sustainable policy to university government” (IT4). In this context, participants acknowledged the transitions of government teams of universities to restart all effort made; they deal with this responsibility to introduce the importance of sustainability and influence new authorities to prioritize it.

They also agreed on the relevance of a participatory university community, and the possible unification of working together aligned with the same vision and under the same principles. However, this group of stakeholders assumed the lack of communication and integration among actors in the university community: “Sometimes we don’t realize that a group of researchers is working with something that could be useful in our management. It needs to work on a university strategy to join efforts focused on the same scope” (IT4).

In fact, participants suggested focusing on an accurate participatory and interactive model to commit other stakeholders of the community to establishing sustainability in their daily activities and strengthening policies integrating an overall approach in the strategy of universities. “Once the sustainability vision is engaged in the core of the university, it would be impossible that the next government would remove this mindset” IT4

Finally, the results indicated that the Student Representatives were convinced of the potential contribution of these groups of stakeholders to encourage their role in a participatory plan toward sustainability. Nevertheless, there was a gap in students’ relationships with the rest of the community as well as a lack of open spaces to engage them through daily activities. The academic experts assumed the significant influences of different working groups internally and externally; nevertheless, they admitted their work is not reflected in the long-term because of undefined planning and vision. In this context, Environmental Managers confirmed the key to maintaining a sustainability culture over time is a participatory university community aligned with the same vision.

## 4.4 Summary

In this chapter, the findings were oriented to the perception of stakeholders about sustainability and the integration of stakeholders’ participation in the management model to develop policies toward sustainability. The results in the first part, regarding the mission of universities, demonstrated the importance of encouraging students to develop skills, knowledge, and behavior toward sustainability to face current and future challenges in their careers. However, in reality, according to stakeholders’ point of view, universities lack the incorporation of sustainability in their academic programs, as well as

the outreach of research projects that are useful for the community. Along this line, the most relevant themes presented for the participants were their attention in environmental conservation, the universities' community awareness in a negative reference, and the students' participation. Also noted as common were teaching and curricula. For a particular group of participants the most recurrent concerns were communication channels to get the environmental message across to the community, as well as mobility and institutional commitment.

Findings from the Environmental Managers regarding their opinions of current activities revealed that a fundamental action is digitalization in terms of recycling and waste control, campus settings, energy and water initiatives, risk prevention, and healthy universities. Nevertheless, teaching and curricular, research, and mobility were the main weakness to improve. This leads into the following section on what must be done to be (more) sustainable, the most important actions for which were accountability documents and a strategic plan aligned with a sustainable environmental vision. Furthermore, influencing local communities through a participatory approach from the mission of HEIs was considered important. Finally, for most representatives, the challenges and barriers to implementing SD were "other priorities," "financial aspects," and "to approach the university community."

The second part of this chapter introduced stakeholders' participation in the university management model, first to identify their knowledge and then their participation and role. The conclusion of this part was that the majority of participants revealed they lacked knowledge on their universities' performance, because this was not part of a specific plan, and lack of reporting documents, which they recognized as making

the community poorly informed. Hence, they believed their knowledge could be a potential contribution to engage their participation and influence over other stakeholders.

# CHAPTER 5: SOCIETY'S PERCEPTION ON SUSTAINABILITY- AND UNIVERSITY- BASED NEWSPAPER COVERAGE IN SPAIN

# CHAPTER 5: SOCIETY'S PERCEPTION ON SUSTAINABILITY- AND UNIVERSITY-BASED NEWSPAPER COVERAGE IN SPAIN

This chapter examines the third main objective of the study, which was to identify the general society's opinion about sustainability and Spanish universities. For this purpose, I analyzed newspaper coverage in Spanish media over the previous 4 years looking for the most relevant themes, because "the news media are the central interpretative system of modern societies" (Schmidt, Ivanova, & Schaefer, 2013, p.1233). This study used Spanish editorial content from the MyNews database of 1,285 national media outlets between 2014 and 2017, using "sustainability" and "university" as the main keywords. To address these original texts, I chose LDA to analyze the large corpus and discover the themes with high frequency, and most crucially, the relations between them (Blei, 2012).

This chapter is organized into two main sections; the first indicates the main trends in Spanish news during 2014–2017 (from January to June), and the second section introduces the relationship between the composition of media agendas and the perception of stakeholders presented in Chapter 4.

## 5.1 Chapter Objectives

As shown in the literature, there is a correlation between media toward sustainability as an intermediary of public opinion to be formed, the choice of analyzing newspaper coverage as a possible development in the arguments and perspectives of social actors on sustainability, and the role of the university for society. Thus, to conduct the third stage of this study, the main central RQ was **(RQ3) How were sustainability**

**and universities topics reported and portrayed by Spanish newspapers to the public?**

In the theoretical framework, media attention is oriented as the most important driver of both sustainability and universities, considering the strategic stakeholders and integration of community participation. Considering this, a gap exists in the research to address society as a key stakeholder to contribute to Spanish universities' management system toward sustainability, thereby including their perception. Consequently, I defined two sub-RQs:

*RQ3.1 What are the main trends in Spanish Newspapers covered in the MyNews database toward sustainability and higher education during 2014–2017?*

*RQ3.2 Is there any correlation between the media's approach to a specific issue and the subsequent perception by stakeholders?*

In Chapter 6 (the discussion), a set of recommendations is introduced to integrate a stakeholder approach into the management model of universities to achieve sustainability.

## 5.2 Methodology and Data Collection

The following section synthesizes the third technique applied to the study and summarizes the different review steps followed to pre-process the data. See Chapter 3 for in-depth explanations of topic modeling and the software used to explore the data.

### 5.2.1 Topic Modeling

To answer the third central RQ, I focused my attention on the media in Spain, identifying the MyNews database, which contained a list of 1,285 Spanish media outlets (printed and online). Table 15 shows the process followed to build the corpus. As the first

step, the parameters to search articles related to this topic were the keywords "sustainability" and "university." The results were 41,316 news articles downloaded directly from MyNews. In the second step, news articles were screened manually according to the title of the news and the relation with the themes to avoid news that could cause noise or be irrelevant for the study; the outcome was a total of 17,062 news articles. In the last stage, the researcher developed a list of Spanish stopwords for cleaning the data to have a corpus ready to be run through the software, with a total of 5,257,198.00 words.

| **The Corpus** | | | | | |
|---|---|---|---|---|---|
| | **Years** | | | | |
| **Process** | **2014** | **2015** | **2016** | **2017** | **Total** |
| Number of news articles downloaded: | 6,948,00 | 12,440.00 | 12,665.00 | 9,263.00 | 41,316.00 |
| Number of news articles screened manually: | 6,088.00 | 3,295.00 | 5,081.00 | 2,598.00 | 17,062.00 |
| Number of words screened manually: | 3,126,539.00 | 1,706,036.00 | 1,293,198.00 | 2,432,196.00 | 8,557,969.00 |
| Number of words after cleaning stopwords: | 1,327,173.00 | 1,676,781.00 | 459,227.00 | 1,794,017.00 | 5,257,198.00 |

*Table 15: The Corpus.*

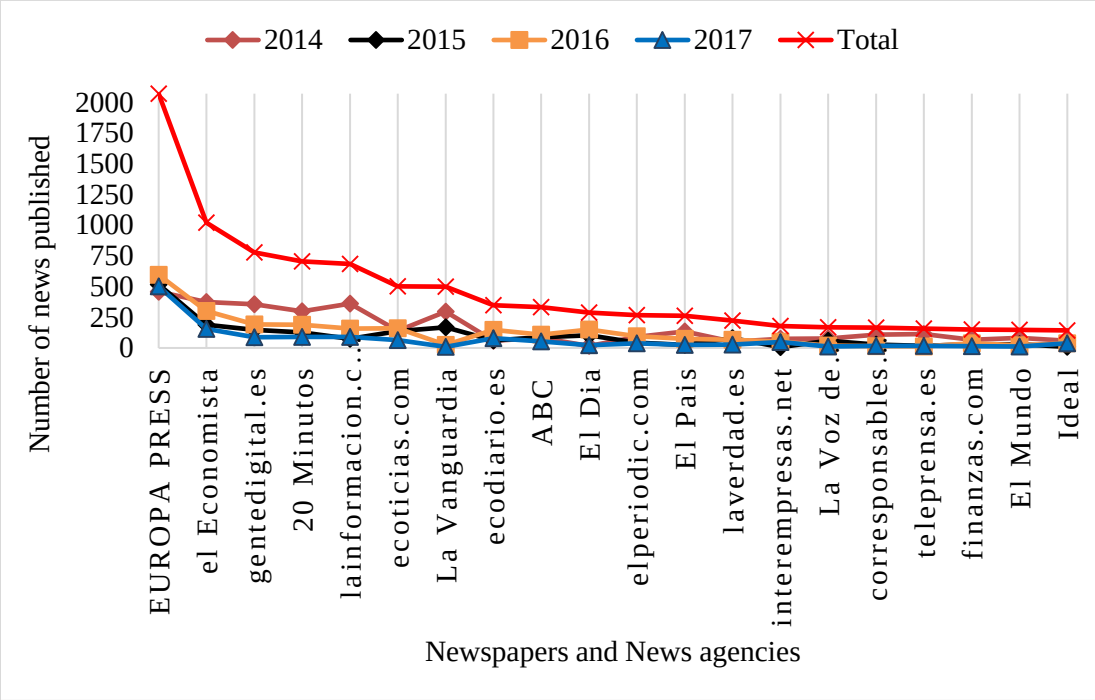


*Figure 27: Most relevant sources of news.*

Regarding the type of news source, the most relevant is the Europa Press agency in terms of the number of publications over the years. According to Carvalho and Burgess (2005), broadsheet newspapers have the highest agenda-setting impact compared with other types of media; therefore, I identified 446 news sources from 1,285 media outlets that had published at least one article related to universities and sustainability. These sources included press and online media, considering that many of newspapers today publish the same content on their websites as in press media.

Figure 27 illustrates the distribution of coverage in the 20 main newspapers, where the most relevant are *Europa Press, El Economista, Gente digital, 20 Minutos, La Información, Econoticias, La Vanguardia, Ecodiario, ABC, El Dia, El Periodic, El País, La Verdad, Interempresas, La Voz de Galicia, Corresponsables, Teleprensa, Finanzas,* and *El Mundo e Ideal*. Consistently, the highest representation is *Europa Press* in both

versions (printed and online), which is the most relevant news agency in Spain that provides the majority of news to newspapers. Notably, different patterns exist in the number of publications per year. Thus, *Europa Press* has had a steady issuance number. However, there was a slight decrease in the coverage of *El Economista* over the 4 years, an economic news daily founded by the co-founder of El Mundo.

On the other hand, *La Información* and *La Vanguardia* noticeably plummeted in terms of the number of news articles related to these topics, especially in the last 2 years. Added to this is a similar trend repeated by *El Dia*. The rest of the news sources stay in the same stable line.

## 5.3 Findings

This section presents the main findings that answer the third central RQ; it is divided into two parts: Part I – Main trends in Spanish newspapers toward sustainability and higher education throughout 2014–2017, and Part II – Relationship between the compositions of these media agendas and the perception of stakeholders.

### Part I – Main Trends in Spanish Newspapers Toward Sustainability and Higher Education Throughout 2014–2017

The corpus was organized by year; the analysis was run over the 4 years to obtain the first outcome, the next table, which represents the 20 most probable *bag-of-words* with their 20 most probable terms. Table 16 contains the rank of the *bag-of-words*, a proposed label that describes the set of words per topic, the number of topics, topic size, and the topic size in percentage.

| Rank | Proposed Label | Nº Topic | Topic size | Percentage | Set of words |
|---|---|---|---|---|---|
| 1 | **SDG - Environment management projects** | 6 | 0.07216164 | 7.22% | development, sustainability, management, environment, social, sector, objective, plan, research, project, innovation, involvement, knowledge, program, actions, work, collaboration, objectives, employment, tourism |
| 2 | **Governmental policies** | 19 | 0.06435856 | 6.44% | law, article, administration, individual, agreement, commission, right, decree, public, work, deadline, decision, access, character, maximum, application, tribunal, entities, council, regime |
| 3 | **Economy model for a responsible society** | 4 | 0.06114246 | 6.11% | society, social, sustainability, do, model, economy, future, system, responsibility, quality, important, need, development, sector, value, citizens, work, life, resources, importance |
| 4 | **University government participation or collaboration** | 1 | 0.05882649 | 5.88% | university, director, president, sustainability, environment, Andalucia, Sevilla, act, foundation, rector, director, government, Madrid, Cordoba, professor, international, board, workday, development, teacher |
| 5 | **Higher education programs and research** | 8 | 0.05518858 | 5.52% | university, research, training, students, education, students, master, campus, program, studies, undergraduate, scholarship, undergraduate students, undergraduate student, professionals, teachers, individual, engineering, academic, sciences |
| 6 | **Public financial budget or funding** | 9 | 0.05467380 | 5.47% | euro, government, plan, board, university, funding, budget, sustainability, council, Andalucia, city council, law, community, counselor, project, administration, local, system, funds, total |
| 7 | **CSR - Innovation development** | 16 | 0.05050338 | 5.05% | sustainability, social, innovation, Malaga, company, sector, seat, forum, development, responsibility, university, foundation, economy, international, CSR, company, corporate, meeting, director, business |

| Rank | Proposed Label | Nº Topic | Topic size | Percentage | Set of words |
|---|---|---|---|---|---|
| 8 | **Energy and water efficient consumption systems** | 17 | 0.05019023 | 5.02% | energy, water, consumption, efficiency, system, systems, project, renewable, saving, management, construction, building, electrical, facilities, technology, technologies, emissions, materials, sustainability, reduce |
| 9 | **Urban Mobility and commuting modes** | 18 | 0.04955120 | 4.96% | company, mobility, group, transport, commercial, social, Murcia, daily, vehicles, Santander, bicycle, â€¦, book, Malaga, Cantabria, Granada, city council, Barcelona, network, Europe |
| 10 | **Marine ecosystem conservation** | 10 | 0.04898892 | 4.90% | project, area, impact, species, sea, meters, conservation, natural, protection, river, actions, environment, fishing, promoter, port, coast, beach, plan, water, assessment |
| 11 | **Waste management - food consumption** | 15 | 0.04808006 | 4.81% | waste, products, production, agriculture, quality, project, cultivations, management, food, consumption, sector, containers, cultivation, industry, assessment, product, equipment, supply, work, treatment |
| 12 | **Educational projects for sustainable architecture** | 11 | 0.04689161 | 4.69% | university, project, research, awards, international, sustainability, architecture, foundation, school, high school, Madrid, countries, category, group, polytechnic, construction, national, higher, development, euro |
| 13 | **Daily actions of citizens** | 13 | 0.04661868 | 4.66% | people, do, world, life, work, theme, power, Â¿que, class, example, reality, book, times, live, politicians, never, conditions, mayor, crisis, â€ |
| 14 | **Social & press media, innovative participation tools** | 12 | 0.04660281 | 4.66% | market, news, workday, Facebook, Juana, twitter, civil, fair, quote, register, tools, draft, â€¦, exclusive, power, participate, local, themes, innovative, Malaga |
| 15 | **Educational activities supported by the city** | 2 | 0.04629039 | 4.63% | university, week, Madrid, campus, workshops, culture, city council, project, program, education, museum, environment, association, international, students, space, |

| Rank | Proposed Label | Nº Topic | Topic size | Percentage | Set of words |
|---|---|---|---|---|---|
| | | | | | festival, workday, workshop, sustainability |
| 16 | **Climate change effects** | 5 | 0.04517554 | 4.52% | change, climate, emissions, countries, idea, global, worldwide, carbon, effect, development, national, environment, world, gases, sustainability, greenhouse, climate, population, level, resources |
| 17 | **Global economy factors** | 7 | 0.04467883 | 4.47% | sector, data, market, countries, crisis, economy, growth, sustainability, GDP, level, system, employment, report, euro, prices, media, price, algorithm, regard, debt |
| 18 | **Official communication channels** | 14 | 0.04374652 | 4.37% | â€¦, communication, total, left, direct, distribution, special, aims, mode, authorization, partial, written, indirectly, copyright, outlines, lucrative, summaries, express, Madrid, notification |
| 19 | **Ecotourism and conservation** | 3 | 0.03543030 | 3.54% | Canarias, Tenerife, Canaria, tourism, Europe, Palmas, town hall, lagoon, park, government, technological, island, president, university, redistribution, waste, rebroadcast, scientific, islands, water |
| 20 | **Participation of regional government** | 20 | 0.03090000 | 3.09% | Valencia, Alicante, university, Barcelona, Valenciana, university, generalitat, Castellon, valÃ¨ncia, Cataluna, per, polytechnic, comunitat, water, Tarragona, Catalunya, jaume, uji, team, conselleria |
| | | | 1 | 100.00% | |

*Table 16: Main topics of the whole corpus: 2014–2017*

### 5.3.1 Main Topics Reported and Portrayed by Spanish Newspapers to the Public

I selected the topics with the highest probability in the composition (those with the highest rank and that represented 50% of the overall corpus); this selection was

dominated by nine bags of words, calling attention to the topic's size in the overall corpus, which means the weight of each set of keywords. The number of the topic had no significance. Moreover, the proposed labels shaded in Table 19 were identified as: *SDG-Environment management projects, Governmental policies, Economy model for a responsible society, University government participation or collaboration, Higher education programs and research, Public financial budget or funding, CSR - Innovation development, Energy and water efficient consumption systems, and Urban mobility and commuting modes.*

These topics formed the focus of the press coverage analysis after the list of terms in the first topic were reviewed: (*SDG-Environment management projects)*, development, sustainability, management, environment, social, sector, and objective. Universities' participation can be considered a key driver of SD projects when a society actively participates to support the sustainable management of ecosystem preservation. Moreover, one of the main missions of universities is to educate society to be able to respond to the demands introduced by the SDGs, a crucial agenda for improving the world. Thus, the transition from Agenda 21 to SDGs between 2014 and 2015 was a challenge for Spain in many aspects. Additionally, the effects of an economic crisis and actions boosted government alternatives to renew priorities for the country.

In this context, the second topic (*Governmental policies)* introduced the following terms: law, article, administration, people, agreement, commission, and right. This means that universities could be considered an interface of the local and global community addressing local sustainability issues (Wals, 2014) beyond the tradition of education and research, and toward a "third mission" of achieving social impact-fostering partnerships with governments and communities (El-Jardali, Ataya, & Fadlallah, 2018). Furthermore,

universities have a potential influence on the industry and government policies to engage people in the community and assume critical participation in the process of transforming for a sustainable future.

The third ranked topic, an *Economy model for a responsible society*, was linked with the following terms: society, social, sustainability, to do, model, economy, future, and system. This emphasized universities' contribution to regional socioeconomic development. Larran Jorge and Andrades Pena's (2017) analysis of 15 academic journals on university social responsibility identified socioeconomic development's main topic, introducing different activities of universities that generate economic impacts in society, especially on the regional environment. Moreover, universities contribute to green economic development around them by working with local governments and businesses to encourage a concentration of high-tech industries (Trencher et al., 2017).

Focusing on this topic, Székely and Vom Brocke, (2017) analyzed 9,514 sustainability reports published between 1999 and 2015 by 3,906 different organizations. The authors applied topic modeling to obtain common topics and practices, the results of which were 42 topics related to sustainability. Of the 42, the authors assigned 31 to the *Organizations report on environmental, social and economic sustainability*, taking into consideration the triple bottom-line dimension being integrated on a strategic level and not only at the operational level of organizations.

On top of this, the fourth topic (*University government participation or collaboration)* included the following keywords: university, director, president, sustainability, environment, and Andalucía. It portrays institutionalizing partnerships with the government and community. Universities have an important role in becoming places for the interchange of new ideas through teaching, research, and university management,

thereby promoting and disseminating more advanced activities in sustainability and being vehicles for social change. The topic modeling results of Sandoval Hamón, Bayas Aldaz, Rodríguez Pomeda, Sánchez Fernández, and Casani Fernández de Navarrete (2016) as well as Székely and Vom Brocke (2017) highlighted that the topic of *Sponsorship activities for social sustainability:*

> "Terms: community 2.78%; school 2.45%; project 2.28%; education 1.93%; child 1.70%; development 1.68%; support 1.66%; foundation 1.28%; health 1.16%; initiative 1.11%; student 1.04%; world 0.86%; international 0.84%; family 0.83%; society 0.81%; local 0.81%; people 0.78%; partnership 0.76%; country 0.70%; and environment 0.69%" (Székely and Vom Brocke, 2017, p.24)

Focuses on schools and education as part of the relevant practices of organizations. The found that decision-makers appear to believe in the role of education in improving (social) sustainability in the long term. Thus, HEIs can work with policy-makers and stakeholders to identify policy priorities and problems and assess options for implementing solutions and evaluating policies (El-Jardali et al., 2018).

Through connecting the previous main topics, it can be observed that the main missions of HEIs are very closely associated among terms. In the fifth topic (*Higher education programs and research),* the keywords university, research, training, students, education, and students* showed that the agendas of Spanish newspaper coverage reported the intervention of HEIs as a driver of co-creation social transformations through integrating citizens (Trencher et al., 2017). This involves knowledge production or solution creation and demonstrations toward implementation. The seventh topic of *CSR and innovation development* refers to a new outstanding paradigm that leads the economy

to provide real change in improving the peoples' wellbeing as well as economic, technological, and environmental growth (Jali, Abas, & Ariffin, 2017).

In addition, as I emphasized earlier, economic aspects are common topics throughout the corpus. *Public financial budget or funding*, which ranked in sixth place, involves multiple challenges for universities, Aleixo, Leal, and Azeiteiro, (2016) referred to results from a study of Portuguese universities that recommended that the government should increase its financial support for HEIs because they identified the main barrier to HEIs' SD as financial factors. In addition, the economic crisis in Portugal has impacted HEI funding. Finance is a prominent concern in Spanish newspaper agendas. As an example, in 2015 I identified a news report from *El Mundo* where the Social Council of Spanish universities made a request to the University of Valladolid: "as a consequence of the crisis in the next fiscal year the University of Valladolid «should exercise prudence in the quantification and management of the budget and look for additional and alternative sources of funding»."[6]

I have labeled the last two resultant communities *Energy and water efficient consumption systems* and *Urban mobility and commuting modes.* Here the attention shifts to building a relationship between them toward a green campus. This implies that universities have an impact and should consider:

> (i) reducing their environmental footprint through energy, water, and material resource efficiency in their buildings and facilities; (ii) adopting sustainable procurement practices in supply chains and catering services; (iii)

[6] Original version: …" como consecuencia de la crisis, en los próximos ejercicios la Universidad de Valladolid «deberá extremar la prudencia en la cuantificación y gestión del presupuesto y buscar fuentes de financiación adicionales y alternativas»" El Mundo, 11.04.2015

> providing sustainable mobility options for students and faculty; (iv) adopting effective programs for waste minimization, recycling, and reuse; and (v) encouraging more sustainable lifestyles (Rio +20 UN Conference on Sustainable Development, 2012, para. 4).

A fragment of news from 2015 (*Diario Jaen*) and 2016 (*Europa Press*), respectively, referred to the involvement of the Universities of Jaen and Valencia in the Green Metrics Ranking. The Green Metrics Ranking refers to universities' sustainable performance and indicators in education, infrastructure, energy and climate change, waste management, water consumption, and transport.

In sum, the nine topics describe an interconnection between the main concern of sustainability and the participation of universities together with society. By contrast, Barkemeyer et al. (2013) introduced a general idea of southern agendas and portrayed relevant issues such as corruption and poverty related to sustainability. However, the difference between our study and the previous cited ones are in topics concerning citizens' participation and the post-economic crisis.

### 5.3.2 Main Topics Reported and Portrayed by Spanish Newspapers: A Longitudinal Analysis

After analyzing the whole corpus for the 4 years, a complementary outcome was found through an individual examination year by year. Following the same parameters established in the first section to identify the 20 most relevant sets of words with their 20 highest-probability terms, the researcher selected the highest ranked topics represented in a 50% average of the topic size in the overall corpus per year. These are presented in table 17 below.

| 2014 | | | 2015 | | 2016 | | 2017 | |
|---|---|---|---|---|---|---|---|---|
| **Rank** | **Topic size** | **Topic** | **Topic size** | **Topic** | **Topic size** | **Topic** | **Topic size** | **Topic** |
| **1** | 0.06997131 | Social development management | 0.09580146 | University missions: research, teaching, engagement | 03.1315552 | Innovative project collaboration-sustainable development management | 0.1016153 | Climate change and public policies |
| **2** | 0.06629975 | International innovative development project | 0.08731776 | University green campus project-City government and university community participation | 0.08823059 | Social model of sustainable development and economic growth | 0.08906089 | Official public documents to implement legislation |
| **3** | 0.06064772 | Public politics and laws | 0.08356027 | Innovative sustainable development projects | 0.07010439 | Research projects supported by the government | 0.08383268 | Plan and actions to reduce environmental impacts |
| **4** | 0.05798888 | Cultural and environmental events at HEIs | 0.06145203 | Sustainable consumption and renewable resources | 0.06983439 | Environmental projects (law) and initiatives by the Government | 0.07792292 | Innovative university Eco-campus project |
| **5** | 0.05436213 | Water and electric resource management | 0.06121581 | Technological development for the environment supported by the national government | 0.06578254 | Sustainable management projects | 0.07060371 | Water and energy consumption, and agricultural waste management |
| **6** | 0.05290614 | Economic and social factors | 0.05857708 | Green campus – Energy-efficient buildings certification | 0.05652335 | University managers and organization | 0.05838198 | Public budget and investment in universities |

| 2014 | | | 2015 | | 2016 | | 2017 | |
|---|---|---|---|---|---|---|---|---|
| **Rank** | **Topic size** | **Topic** | **Topic size** | **Topic** | **Topic size** | **Topic** | **Topic size** | **Topic** |
| **7** | 0.0523 4015 | Public funding for education and research | 0.05268 428 | Marine ecosystem conservation | 0.050003 91 | Academic programs and employment integration of graduates | 0.0548 1381 | Smart green cities innovation |
| **8** | 0.0511 8712 | Citizen and government participation | 0.04989 997 | Assessment of the HES | 0.044800 82 | Eco-enterprise strategy plan | 0.0515 4001 | City educational programs for sustainability |
| **9** | 0.0502 1941 | Job opportunities | 0.04586 863 | Green economy | 0.042928 5 | Eco-campus program outreach | 0.0443 1169 | Future urban mobility for the people |
| Total | 0.5159 2261 | | 0.59637 729 | | 0.619763 69 | | 0.6320 8299 | |

*Table 17: Abstract of the most relevant topics per year.*

Note: 50% of relevance in every corpus per year.

In accordance with table 16, during the first year of the analysis (2014), the most relevant topics had a nuance of innovation and government participation to be implemented in collaborative projects with companies and government partnership. In an exchange of infrastructures, technical and human resources between educative institutions and the community was mentioned in a fragment of news from Diario León: "...to develop research activities, social innovation training and outreach, social enterprise entrepreneurship networking, local and rural development, as well as other areas to encourage the social economy and new working groups that share these principles…"[7]. There is precedent of government connection

[7] Original version: (…para desarrollar actuaciones de investigación, formación y promoción en innovación social, empresa social, emprendimiento en red, desarrollo rural local, así como cualquier otra materia

introducing policies and laws to boost social and educational innovation to adapt learning needs to the current environment; in an example of these initiatives, Europa Press informed an innovation award from the Social Council of Universidad de Valladolid, supporting "participatory learning methodologies that stand out for their multidisciplinary application, the good use of ICT, the improvement of student learning, the implementation of indicators that measure the usefulness of the project…"[8]. These are samples of the main trends in coverage in 2014, specifying improvements to achieve sustainability in the strategic sector for the community; higher education sustainable action supported by local, national, and European governments; energy proposals; and a laboratory of ideas to foster eco-innovation.

In 2015, coverage was focused mainly on the traditional aims of universities (teaching, researching, and transfer of knowledge) through community outreach. There were themes of collaboration in research projects conducted by scientists and students, technological development, and debate of the theoretical application of subjects, and transforming education programs into drivers of an innovative solution to improve a sustainable environment. Promoting a sustainably managed government and education system, Europa Press' coverage detailed "a set of entities that belong to the University system acting in such an innovative and perspective way, congruent with social and environmental demands."[9] Thus, environmental education was translated into practical actions such as energy efficiency and sustainable consumption; therefore,

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relacionada con el estímulo de la economía social para fomentar nuevos grupos de trabajo que compartan estos principios.) Diario León (27/12/2014)

[8] Original version: (…Se reconocerán aquellos proyectos que incluyan elementos innovadores en su desarrollo, metodologías de aprendizaje participativas, que destaquen por su aplicación multidisciplinar, el buen uso y aprovechamiento de las TIC, la mejora del aprendizaje de los alumnos, la implantación de indicadores que midan la utilidad del proyecto, los avances sobre la situación inicial, la transferencia de resultados y la sostenibilidad en el tiempo del proyecto.) Europa Press. 25/07/2014

[9] Original versión: (…conjunto de las entidades que integran el Sistema Universitario, actuando de forma tan innovadora y prospectiva, como congruente con las demandas sociales y medioambientales…) Europa Press. 11/06/2015

universities are an engine for developing solutions to contribute to demands from an advanced society.

Coverage in 2016 turned attention to social and economic growth, and the pattern demonstrated here was the challenges of SD implementation considering the UN's new agenda of the SDGs, as well as reflection on the importance of private and public companies and social participation for a balanced, inclusive, and sustainable economy. Additionally much relevance was found in career programs, training courses, and academic offer yield to a sustainable environment and CSR projects, as well as the role of universities to educate the young generation and develop research platforms encouraging environmental projects, such as sustainable mobility, natural resource conservation, waste management, and energy efficiency.

During the last year (2017), trends showed an increase of public policies and legislation toward climate change to reduce environmental impacts. In a fragment of news, Europa Press presented a local and national government reflection: "The regional government's will is to be and act as a socially responsible Administration… the future Strategy of CSR will allow us to advance as a society, confront our weaknesses as an Administration, meet the challenges of our economy and promote instruments such as social responsibility that provide greater sustainability to the system".[10] Documents such as Agenda 21, Earth Summit, and the White Book of Environment Education in Spain are themes under discussion, strategies to develop competitiveness and to achieve new challenges of innovation and sustainable solutions. In a path to provide these sustainable initiatives in 2017 was relevant waste and recycling planning yield for a circular economy, as well as conservation plans for species and expanding to water consumption projects that promote technology and efficient production in agricultural sectors.

[10] Original version: "La voluntad del Gobierno regional es ser y actuar como una Administración socialmente responsable..la futura Estrategia de Responsabilidad Social Corporativa nos va permitir avanzar como sociedad, afrontar nuestras debilidades como Administración, cumplir los retos que tiene nuestra economía e impulsar instrumentos como la responsabilidad social que aporte una mayor sostenibilidad al sistema." Europa Press, 06/03/2017

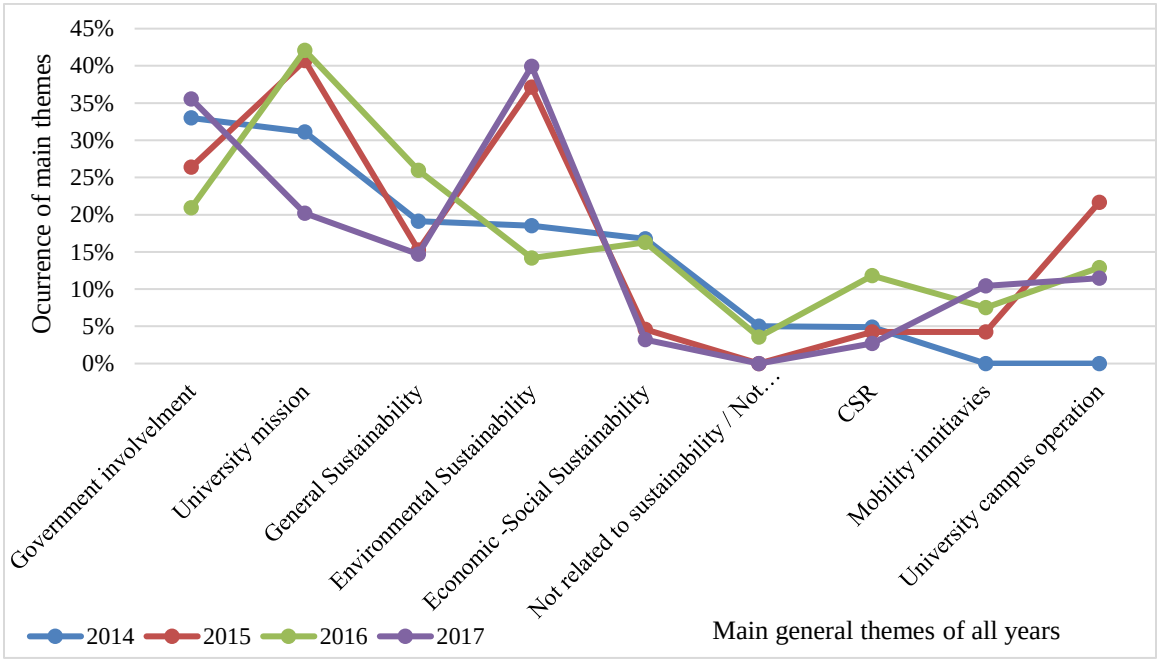


*Figure 28: Trend of topics per year classified by general themes.*

To summarize, comparing the general themes over the years and their evolution, Fig. 28 displays the total of the frequency of topics per year previously classified in nine general themes according to the closest relation to the topic; the classification can be found in Annex 19. As is shown in Fig. 28, the highest recurrences through the time under analysis were "University mission" and "Environmental Sustainability," with a slight decrease in 2014 regarding "University mission" and in 2016 a significant decline in the theme "Environmental Sustainability." By contrast, the outline of less prevalent themes was the category of "News not related to sustainability" or "not relevant for the study" as job opportunities, followed by "Mobility initiatives," "University campus operation," "Economic-Social Sustainability," and "CSR"; however, in 2016 there was a substantial rise in the frequency of these last themes. Finally, in 2014, "Government involvement" started with high prevalence, continuing into 2015 with a slight drop, yet in

the following year presented a slump in the frequency before a dramatic recovery in 2017.

In conclusion, Spanish press coverage has described a debate in society widely conceived as an interaction of stakeholder groups (society) concerning the participation of universities' traditional and innovative activities to be disseminated and consolidated for society's participation in universities' role in local, regional, national, and international contexts, to develop enhanced solutions for a sustainable environment. In the following part, I articulated the findings from Part I with the perception of stakeholders identified in Chapter 4.

## Part II – Relationship Between the Compositions of These Media Agendas and the Perception of Stakeholders

The following section examines the outcomes of the perception of stakeholders about sustainability in Spanish universities and the most representative topics that reflect sustainability and university among the first analysis through 2014–2017.

### 5.3.3 Similar Perspectives from Stakeholders and Media Agenda Compositions

**Mission of Universities Toward Sustainability:** During the first interpretative phase, I focused my attention on the connections of the main university activities (teaching, research, and transfer of knowledge) among society, approaching stakeholders' opinion in the role of a university promoting environmental sustainability. The results revealed the crucial factor of incorporating effective education and teaching for tangible learning performance outcomes that enable the acquisition of competencies, behaviors,

and skills to provide students with awareness and engagement. Furthermore, university courses should be created and updated to provide more complete, holistic, and systemic sustainability education to future leaders, decision-makers, educators, and agents of change.

Hence, the correlation with the set of words in Table 16 labeled *"Higher education programs and research"* ranked fifth, which was associated with terms related to sustainability education, career programs, students, campus, professionals, and research. Moreover, research is a latent matter because of the lack of information on projects or activities to encourage innovation among students according to the findings in Chapter 4. Furthermore, the fragmentation of research activities in different areas and faculties are a challenge to consolidating efforts and results in community outreach. Regarding research in and practice of SD in a collaborative role of universities with public and private institutions, this dimension yielded *"SDG-Environment management project," "Economy model for a responsible society,"* and *"CSR-Innovation development*," ranked in first, third, and seventh positions, respectively.

Consequently, the most probable themes included collaborations in social and innovative plans and projects, economy model, citizen participation and responsibility, corporative responsibility in business, and university alliances with international companies. These findings confirmed the growing interest in university and external community integration and interaction in the core activities of organizations and universities for becoming more open to collaborations and acknowledging the potential source of innovation and knowledge. A change in mindsets and culture is required in academia, companies, and government to generate a dialog to raise the global challenge.

**Financial Matters:** Because the analysis in Chapter 4 revealed the most relevant barrier to implementing sustainable development in Spanish universities from the perspective of stakeholders was "financial factors," it is also an inherent concern among university stakeholders, especially academic experts and Environmental Managers. University governments should commit to providing specific resources and developing policies, strategic lines, and real actions that remain in the long term and adapt over time.

Hence, *"Public finance budget or funding"* was also observed to be a relevant topic portrayed in press media coverage, ranking sixth, with the most probable terms being government plan, university budget and funding, city council, administration system, law, and funds. Furthermore, financial factors may be interrelated to address sustainability implementation, not only in the traditional activities of the university but also in campus operations for improving infrastructure and developing new skills in employees and students. Additionally, because of this, universities dependent on policy and funding, and the integration of sustainability is driven by internal and external influences of emerging governance and management procedures that change over time according to a democratic system. In fact, stakeholders highlighted this last constraint; the effect of governance will be connected to the financial dimension.

**Sustainable Initiatives:** In this regard, results from the previous chapter indicated the focus of environmental sustainability management on campus as one of the relevant themes for participants in the study. Thus, stakeholders gave special attention to mobility, caused by the lack of awareness in the community mode of commute, with private vehicle use being one of the main issues, as well as the importance of mobility coordination between city halls and universities.

Additionally, energy and water consumption were emphasized in the universities' performance, being the most practical sustainable activities that have remained over time to improve the Eco-campus approach. However, findings indicated that a deficiency exists in specific strategic plans, regulations, control systems, and overall processes that embed sustainability initiatives in university management schemes, particularly sustainable actions for energy, water, and waste, in addition to the Eco-campus system elements' interrelations within and throughout the time dimension (i.e., the short-, long-, and longer-term).

Moreover, two topics related to university and sustainability in mass media focus on the following topics: *"Energy and water efficient consumption system"* ranked eighth and *"Urban mobility and commuting modes"* ranked ninth. Probable terms under these topics included an efficient consumption system, renewable projects, technologies, cities, mobility network, and government. Hence, the results reflected environmental conservation elements that can be seen as distinct at the operational level in campus and influence city initiatives. In this approach, it is a common concern to be addressed by the university mission through institutional engagement and city participation. Therefore, the perceptions of stakeholders and mass media main topics were related.

## 5.4 Summary

I conclude this chapter by providing a general outline of society's opinions toward sustainability and university topics and themes represented in media coverage, as well as the correlation of those findings with the contribution of stakeholders' opinions introduced in Chapter 4. Thanks to *LDA*, a new statistical mode focus on automatically discovering hidden latent structures from large text corpora (41,316.00 news articles

downloaded). LDA provided valuable insights, allowing the researcher to obtain a broad picture of sustainability and universities throughout 2014–2017 (half year).

Furthermore, the results involved the main trends portrayed in the general composition and an analysis of the mass media agenda through the years, as well as the connection between topics associated with general themes.

Regarding the news sources, there were 446 newspapers online and in print that had published at least one article related to these topics from 1,285 sources. Some of the most relevant sources were *Europa Press, El Economista, Gente digital,* and others; additionally, since 2014 the amount of coverage of the most relevant newspapers has declined, and there were only two newspapers that specialized in environment and CSR: *Econoticias and Ecodiario*. These specialized newspapers did not show any significance toward being the most popular newspapers in the country.

This study elucidates sustainability in universities and how it requires interactions with and value creation for all stakeholders, including society, to be considered.

The findings revealed a list of the most relevant topics: *SDG-Environment management projects, Governmental policies, Economy model for a responsible society, University government participation or collaboration, Higher education programs and research, Public financial budget or funding, CSR - Innovation development, Energy and water efficient consumption systems, Urban mobility, and commuting modes.* These topics captured an exploration on an upward trajectory and interest in sustainability issues raising prominent participation of the university community and universities' role to introduce such issues in the education system for use as an assessment instrument of the university mission approach.

# CHAPTER 6: SUMMARY OF THE MAIN FINDINGS, CONCLUSIONS, LIMITATIONS, AND FURTHER RESEARCH

# CHAPTER 6: SUMMARY OF THE MAIN FINDINGS, CONCLUSIONS, LIMITATIONS, AND FURTHER RESEARCH

This chapter presents the main discussion of the thesis based on the literature review process as well as that deduced from the results obtained through empirical research. Moreover, I offers some suggestions for introducing the main factors of SD in universities interconnected with a stakeholder approach in the management system. Finally, limitations of the study and some recommendations for future research are presented.

## 6.1 SUMMARY OF THE MAIN FINDINGS

The main research objectives of this study were to identify the key perception of stakeholders about sustainability in Spanish universities, to identify the integration of direct stakeholder participation in university management models to develop policies toward SD, and to analyze sustainability- and university-related topics reported on and portrayed by Spanish newspapers. Hence, in **Chapter 1,** the study presented a general overview of the research topic to provide a background of the importance of the study, as well as introduced the main contribution of this thesis in the field of management of HEIs. Thus, it was expected to help translate the valuable information of university stakeholders and produce a useful knowledge base for more effective governance planning and management. Thus, this study used the stakeholder intelligence model of Freeman et al. (2018) for strategic thinking regarding the integration of "Stakeholder Behavior and Perspective Analysis," "Current and Potential Stakeholder Contributions," and social dialog.

**In Chapter 2,** the researcher contextualized the international background of SD defined through several declarations and agreements over the past 40 years. The starting point of the topic as defined as 1972 during the UN's Stockholm Conference, formally acknowledging the importance of education to environmental matters and conservation. At present, the latest agenda included 17 SDGs (UN, 2015) correlated with the priorities of sustainability and integrating diverse areas, especially the potential role of higher education in universities' core missions of teaching, research, and transferring knowledge to society. Cortese (2003) combined the main university activities aligned with the principles of sustainability, integrating *education, research, university operations, and external community* into a full system. Additionally, prominent literature reflected a considerable number of models to approach paradigms in different contexts and realities. Concepts from several authors and summits have been taken in this thesis to provide the necessary scheme for adapting the SD in the Spanish system. As Newman (2006, p. 635) defined, "sustainable development is a continuous process of change and is a process that must be treated as an evolution of ideas." In the Spanish context, the CRUE has been a key driver for conducting sustainable and social guidelines and tools to encourage the incorporation of sustainable initiatives in the Spanish campus. Indeed, there are 29 universities ranked in UI Green Metrics. Nevertheless, there is a critical gap in the consolidation of stakeholders' active roles in the management model of sustainable universities. According to Alba-Hidalgo (2015), only half of the universities in his study of 25 Spanish universities had a specific office to manage the sustainable environment, taking into consideration a total of 76 public and private universities associate with the CRUE.

Consequently, this thesis focused on the stakeholder approach, a management theory defined as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 46). Thus, its core insights were based on a "stakeholder intelligence" orientation that provides innovation, inclusivity, and interconnection of relevant groups and individuals to create value and effective strategic processes to meet exigencies of the changing environment. Based on the findings of this dissertation, the researcher proposed five variables: (*1) Promoting environmental sustainability through the mission of the university, (2) Assessment of universities' sustainable commitment, (3) Knowledge and assessment of universities performance, (4) Environmental management on campus, and (5) The principal barriers to introducing sustainable actions at universities*) to embed in two main aspects of stakeholders, *behavior and perspective analysis* and *current and potential contributions*, to be implemented altogether in the university strategy. As one of the main findings indicated, the need exists for aligning a university's vision between its master strategic plan and generic strategies, as well as more participatory management and governance systems, thereby creating a genuine space for stakeholders' common interests. Figure 29 summarizes the proposal.

Another relevant finding of this doctoral study was the strong connection between social concerns and opinions to emphasize the role of universities in the pursuit of an SD environment. Therefore, it was crucial to consider newspaper coverage as a great influence on the university system and country through the content of topics, first to get stakeholders messages across to other stakeholders, and second, to maximize universities' social contributions to society.

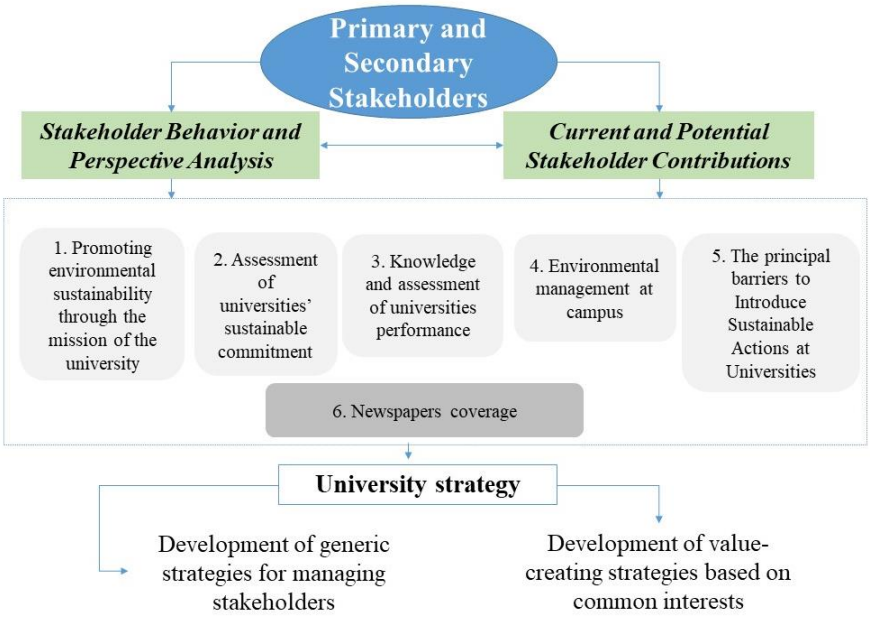


*Figure 29: Proposal: University management for sustainable development from a stakeholder approach.*

Moreover, a social dialog that involves mainstream public awareness and perceptions as well as an assessment tool for validating the main activities of universities are required to be able to address and solve new challenges on the globalization horizon.

In **Chapter 3,** I presented the methodology, a mixed-methods design defined by an explanatory sequential approach in the first and second phase of the study, continuing onto the third phase of the research with a quantitative method (topic modeling). The data were organized in accordance with the three main RQs: *(RQ1) What is the key perception of stakeholders about sustainability in Spanish universities?; (RQ2) How can direct stakeholder participation be integrated into university management models to develop policies toward sustainable development?; and (RQ3) How were sustainability and university topics reported and portrayed by Spanish newspapers to the public?*

In the following chapters, the researcher introduced the RQs and methodology, as well as revealed the results obtained from the target stakeholders: Student

Representatives, academic experts, Environmental Managers, Social Councils, and the general society.

In **Chapter 4**, I focused on the results yielded for *RQ1* and *RQ2*, dealing with the five factors proposed previously, and added an extra factor (*Framework*) to determine the background knowledge of the respondents. The analysis was dived into two main sections: "The Key Perception of Stakeholders About Sustainability in Spanish Universities" and "The Integration of Direct Stakeholder Participation in University Management Models to Implement Policies Toward Sustainable Development." The findings highlighted that universities should organize sustainability activities to encourage students to develop skills related to environmental behavior; moreover, stakeholders should attract attention to incorporating and updating teaching content toward sustainability, acknowledging the importance of educational content being more adaptive and inclusive to current matters from a practical approach.

The respondents highlighted great concerns in the form of environmental conservation, university community awareness, and the relevance of adequate communication channels to get the environmental message across to the community; they also highlighted a general problem with the communication strategy. Additionally, they considered the official and unofficial information to be unclear and scattered, because it was a challenge to reinforce necessary changes for sustainability.

Furthermore, participants believed the university mission to still be disconnected from the sustainable environment path; hence, a key issue in management is strategic planning as part of the institutional commitment. The environmental sustainability indicators incorporated into universities' strategic plan and scorecard should have coherence in policies and strategic documents to enforce them in daily activities. The

literature revealed a dynamic of the overall scheme integrating the main activities of the university and multidimensional sustainable approach, which must provide an adaptive system with a synced vision to be able to remain in the long term.

In addition, activity outreach on sustainability among society should be researched to install sustainability actions in the community, as well as recognize academic contributions, which could potentially provide good practices for the city. In this sense, the findings of this study are relevant to university management and are fundamental for performing highly interconnected activities that are better at creating value, innovating, "dealing with the inclusivity and interconnectedness of various relevant groups and individuals, and better addressing ethical issues" (Freeman et al., 2018, p.10).

Furthermore, a gap existed in students' relationship with the rest of the community and open spaces were lacking to engage them through daily activities. Moreover, the main concern in the role of the representative bodies of the university community was the fundamental compromise of their role in a participatory plan. Therefore, the researcher encourages a stakeholder approach for more balanced participation to increase the utility of knowledge transfer between stakeholders, as well as an enhanced understanding of the ecosystem in a creative and envisioning process toward sustainability.

In addition, the findings indicated that the most relevant sustainable initiatives in Spanish universities were: digitalization, the great influence of campus settings, environmental management, waste control, energy and water consumption, healthy universities, and risk prevention; moreover, a latent challenge was private vehicle use to

commute to campuses, as well as a common concern in the importance of active university–government collaborations.

Generally, all groups of stakeholders revealed themes and interests directly involved in management and strategic connotations, and a strong influence in the organization and on university community culture. In this sense, "stakeholder intelligence" provides an insight into the value of stakeholders' perceptions translated into information, which adds a systematic basis for an improved relationship between actors and organization. This can be used for defining successful strategies to meet realistic goals that can adapt the university mission to meet exigencies of the changing environment.

In **Chapter 5**, the researcher analyzed Spanish newspaper coverage from 2014 to 2017 with the related keywords sustainability and university. The findings of this chapter were linked to *RQ3.* LDA was used to identify themes and their distribution in a large collection of news articles, seeking to elucidate general society's opinions on these topics. Findings generated were divided into two sections: the first was the main topics reported and portrayed over the 4 years and a longitudinal examination, and the second section was the relationship between the composition of these media agendas and the perception of stakeholders from **Chapter 4**.

The results showed strategic participation of universities to be a key driver of the *SDGs* reflected in their contribution to society in practical initiatives; the dominant area was *Environment management projects,* which referred to the collaborative role of the universities with public and private institutions. Along this line, *CSR - Innovation development, Energy and water efficient consumption systems, Urban mobility, and commuting modes* were connected topics to the mission of universities *(Higher education*

*programs and research).* These themes encourage a debate on social and educational innovation to adapt learning to the current environmental needs; the findings detailed the necessity of environmental education to become more adaptive to current and future demands.

The interconnection of sustainability and universities also recalled the attention in *University government participation or collaboration* as key actors to support and develop concrete solutions, because the conception and implementation are expected to rise from resources and government will. This depicts a role where the university materializes local, regional, national, and international societal transformations, as demonstrated in the topic *Economy model for a responsible society.* Countless studies exist on university collaborations with society. Salvioni et al. (2017) agreed on the critical role of higher education in creating and distributing socially relevant knowledge in anticipation of playing a proactive and committed role in the transformation and positive change of societies. Moreover, Larran Jorge and Andrades Pena (2017) suggested the importance of a multi-stakeholder approach to be implemented where all stakeholders are involved. Indeed, an adequate management approach depends on the shared vision of university leaders and stakeholders' active roles to foster sustainability in the university culture.

Furthermore, *Governmental policies* are increasingly implementing agreements, summits, and legislation to enhance and help mobilize resources and efforts to meet growing demands, in this context from stakeholders' perception; this has been a push factor for achieving most of the traditional environmental initiatives on campuses. However, these efforts are still not enough to become a more competitive sustainable campus, even if the sustainability element is embedded in the core mission of the

university. Hence, I attempted to elucidate sustainability and university content to perform content analysis on social perceptions to improve the capacity of practitioners and scientists, to understand the problems and needs reported through media outlets' agendas.

Subsequently, *Public financial budget or funding* contextualized the effects of external influences and government priority to include the sustainability domain in education, campus operations, research, and community outreach. In this context, the economic dimension has been a latent emerging challenge, and is often a limitation in the higher education system.

In this sense, the practical implication is to encourage policy-makers to define best practices for the management of university sustainability. Recommendations are to stimulate universities to pursue improvement in the principles of sustainability; create a base of knowledge of innovation in a local and global context to guide future strategies, thereby accelerating responses to meet sustainable challenges on time; as well as to implement a stakeholder approach to promote stakeholder ownership and utilize it in the organizational strategic planning process.

It would be advisable for university authorities to use society's perceptions of topics reported in newspaper coverage as a self-assessment tool to generate important insights for new research agendas. Thus, the implementation-focused sustainable-activity collaborations between universities and external entities could add the potential for competitiveness in higher education. Results should be updated as a continuous process as part of the stakeholder approach so that universities could prioritize their strategies for delivering improvements in their system.

## 6.2 GENERAL CONCLUSIONS

According to the structure developed in this doctoral thesis, I now summarize the general conclusions in connection to the main objectives and evidence from the empirical part of the study. The main aims were to identify the key perception of stakeholders, identify the integration of direct stakeholder participation in the university management model to develop policies toward SD, and finally to analyze sustainability and university topics reported and portrayed by Spanish newspapers to the public. To address the main purposes, a mixed-methods design was defined using an explanatory approach, which combined quantitative and qualitative methods. Specifically, in the first exploratory phase, a descriptive statistical analysis was applied, which was the starting point for obtaining key data and the main characteristics of participants, as well as greater domains in the theme. Hence, in the second stage, focus groups and in-depth interviews were conducted, and finally in the third stage, probabilistic topic modeling was applied. Thus, the study was consolidated using different research techniques articulating the three central RQs presented below:

*(RQ1) What are the key perceptions of stakeholders about sustainability in Spanish universities?*

*(RQ2) How can direct stakeholder participation be integrated into university management models for implementing policies toward sustainable development?*

*(RQ3) How were sustainability and university topics reported and portrayed by Spanish newspapers to the public?*

The most relevant contributions focused on the first purpose of this study are as follows:

- Considering that universities are dynamic organizations with high potential for influence in the community, stakeholders considered that universities should include periodic updates and modifications of the teaching system incorporating current content related to environmental sustainability issues.
- Concerning teaching activities, at a similar level of interest, participants believed that universities should encourage students to develop their skills and behavior toward the environment.
- The importance of creating and promoting specific environmental and sustainability institutes was highlighted, as well as disseminating research activities on sustainability issues with an impact on society.
- In particular, students believed that information was lacking on academic projects and activities to promote their innovation in topics toward SD.
- Student representatives recognized the relevance of introducing these topics into their careers from a practical implementation and non-theoretical perspective only; continuous adaptation in training capable of generating solutions from the main mission of the university is necessary to obtain a long-term impact in their future work.
- Eco-campus Managers agreed on the relevance of making the scope of SD explicit in the academic content to create students with higher awareness of environmental problems.
- Based on the perception of the participants, one of the main weaknesses in the university system is the curricular implementation of sustainability themes and projects, which is a challenge to achieve through the primary mission.

- The main concerns for university stakeholders were environmental conservation and the low awareness of the university community, especially the lack of student participation. In addition, they were concerned about the poor communication strategy for disseminating environmental issues, a latent concern for academic dimensions, and finally, the mobility and transportation modes for commuting to university campuses. By contrast, the academic experts highlighted the lack of strategic planning as part of an institutional commitment.
- In terms of environmental management, the Student Representatives identified digitization as one of the best practices. However, the use of private vehicles on campus is a constant challenge at different levels. In general, there are permanent practices traditionally set, such as the control of water consumption, energy, and waste management. Nevertheless, sustainable purchasing, healthy universities, and risk prevention are initiatives in the process of evolution in the future.
- On the other hand, the results showed that universities should assign greater importance to including environmental indicators in their annual reports, a strategic plan together with a balanced scorecard that are accessible to the community, as well as specific action protocols for each area, such as water, waste, and mobility management. Thus, universities could be an influence in communities, thereby encouraging active participation.
- Among the most critical challenges for all stakeholder groups was the factor of "other priorities." By contrast, the critical challenge for Social Councils and other groups was "financial limitations." Moreover, student leaders indicated the strategy of addressing these issues in the university community.

These conclusions connected to the second RQ, where the main contributions were as follows:

- Stakeholders showed a considerable gap in their participation in the university management model to implement policies for SD. In particular, Student Representatives indicated the lack of open spaces for dialog and empowerment for university life, without limiting themselves to traditional activities. On the other hand, the academic experts responsible for Eco-campuses agreed on the distribution of academic, research, and environmental management activities without alignment to a strategic plan integrating all areas, capable of empowering the culture of the institution.
- The agents involved assumed the potential of their knowledge, influence, and active role to contribute to a sustainability plan for their university. However, the same agents suggested increasing economic efforts, planning, and resources, to be incorporated under the same institutional vision to evolve and adapt to current challenges.

Regarding the last RQ of the study, the main conclusions were as follows:

- The general opinions of society on sustainability and universities were focused mainly on nine topics with the highest probability of the composition of media outlet agendas throughout 2014–2017 (2017 included from January to June). The nine topics classified by their relevance were: (1) SDG-Environment management projects, (2) Governmental policies, (3) Economy model for a responsible society, (4) University government participation or collaboration, (5) Higher education programs and research, (6) Public financial budget or funding, (7) CSR - Innovation development,

(8) Energy and water efficient consumption systems, (9) Urban mobility and commuting modes.

- Based on the results, the Spanish press described a social debate conceived by the interaction of society and their concern with participating in the traditional mission of the university system. Findings included nuances of innovative activities to disseminate and consolidate the real role of the university in a local, regional, national, and international context, developing better solutions for a sustainable environment together with society.
- It was proposed that sustainability in universities must recognize the inclusiveness, active participation, and interactions of all interested parties, including society, obtaining their opinions as a potential innovator for creating value in the management of university government and maximizing their contribution to society.
- This study demonstrated that the content analysis of the social perception of sustainability and universities could improve the capacity of professionals, scientists, and legislators to better understand the problems and needs at different levels. Hence, relevant issues and the general opinion from all actors could also be included as part of the self-evaluation of the performance of universities, in a continuous innovative process of the management system.

## 6.3 LIMITATIONS AND FURTHER RESEARCH

This study focused on stakeholder perceptions of Spanish universities and their SD dimension. The groups of stakeholders under research were Student Representatives, academic experts, Environmental Managers, and Social Councils. The scope of the groups targeted was limited because of the number of universities in the country and the

broad groups of direct and indirect stakeholders. Thus, future studies could focus on other groups of stakeholders, such as administrative staff, because they are very closely linked to the management process of universities.

Further research might also examine the reasons behind the small percentage of negative answers from stakeholders' perceptions through the survey items; this could be particularly interesting for a better understanding of environmental awareness.

Another limitation related to the data collection process in the first and second stage of the research was the access to high-level university executives or representatives, geographical distance, and time. However, the thesis focused on the most strategic actors in the system. Hence, for further research, the quantitative and qualitative tools applied could be utilized to analyze differences and characteristics between university stakeholders from different geographical locations at regional, European, and international levels, as well as a longitudinal approach to define benchmarking tools among universities from crucial drivers, such as the CRUE.

During the third stage of the study, the researcher created clear boundaries for a big-data review, including only the keywords "sustainability" and "university." In future research, it would be interesting to expand the study to include additional keywords to improve the accuracy of the data input, as well as to define lists of specific keywords involving university limitations or strength by areas. Moreover, a sentimental analysis of newspapers and social networks could be a crucial tool because the vast majority of the university community are students, and this group of stakeholders is more active and linked to social networks.

This new method of big-data analysis will allow for a more in-depth analysis of different growth strategies and their outcomes on universities' performance. In fact, in the

future, universities could implement artificial intelligence into the management process to explore society's needs, or implement real-time matters in different areas of the education system, to examine the reasons for missing topics in the research and update academic programs.

Despite the limitations in the scope of the study, it provides a platform for further studies on university management and sustainable universities to replicate and improve the process in other HEIs globally.

# CHAPTER 6: RESUMEN DE LOS PRINCIPALES RESULTADOS, CONCLUSIONES, LIMITACIONES Y FUTURAS INVESTIGACIONES

# CAPÍTULO 6: RESUMEN DE LOS PRINCIPALES RESULTADOS, CONCLUSIONES, LIMITACIONES Y FUTURAS INVESTIGACIONES

Este capítulo presenta la discusión de la tesis, basada en el proceso de la revisión de la literatura, y en los resultados obtenidos por medio de la investigación empírica. Además, el investigador ofrece algunas sugerencias para introducir los principales factores del desarrollo sostenible en universidades, interconectados con un enfoque de *stakeholders* en el sistema de gestión. Seguidamente, se presentarán las limitaciones del estudio y algunas recomendaciones para investigaciones futuras.

## 6.1 RESUMEN DE LOS PRINCIPALES RESULTADOS

Los principales objetivos de investigación de este estudio fueron: identificar la percepción clave de los *stakeholders* sobre sostenibilidad en las universidades españolas, identificar la integración de la participación de los *stakeholders* directos en el modelo de gestión universitaria para desarrollar políticas hacia el desarrollo sostenible, y analizar los temas sostenibilidad y universidades informados y retratados por los periódicos españoles.

Por lo tanto, en el **Capítulo 1**, el estudio presentó una visión general del tema de investigación, para proveer antecedentes sobre la importancia del estudio, y presentó también la contribución principal de la tesis en el área de gestión de las instituciones de educación superior.

Por consiguiente, el estudio pretende impulsar la interpretación de la valiosa información de los *stakeholders* de las universidades, y producir una base de conocimiento útil para una mejor planificación y gestión de la gobernanza, además de

promover el pensamiento estratégico de Freeman et al., (2018) '*stakeholder intelligence model*' en la integración del 'Análisis de la perspectiva y comportamiento de los stakeholder,' 'La actual contribución y potencial de los stakeholder' y el dialogo social.

**En el Capítulo 2,** el investigador contextualiza los antecedentes internacionales del "Desarrollo Sostenible", definidos a través de diversas declaraciones y acuerdos en los últimos 40 años. El punto de inicio se establece en 1972, durante la Conferencia de Estocolmo de las Naciones Unidas, donde reconocieron formalmente la importancia de la educación en los problemas del medioambiente y su conservación. En la actualidad, la última agenda incluye 17 Objetivos de Desarrollo Sostenible (ODS) (United Nations, 2015), correlacionados para priorizar la sostenibilidad, integrar diversas áreas, especialmente el potencial del rol de la educación superior en su principal misión de enseñanza, investigación y transferencia del conocimiento a la sociedad. De hecho, Cortese, (2003) combinó las principales actividades de la Universidad alineadas con los principios de sostenibilidad, integrando la *educación, la investigación, las operaciones de la universidad y la comunidad externa*, todo en un solo sistema. Adicionalmente, la prominente literatura refleja una considerable cantidad de modelos que abordan diferentes paradigmas en distintos contextos y realidades. Conceptos de varios autores y cumbres, que han sido presentadas en esta tesis, proporcionando el esquema necesario para adaptar el Desarrollo Sostenible (DS) en el contexto del sistema español. Newman, (2006, p. 635) define que "el desarrollo sostenible es un proceso continuo de cambio y es un proceso que debe ser tratado como una evolución de ideas." En el contexto español, la CRUE ha sido el motor clave para conducir lineamientos sostenibles y sociales, así como herramientas para fomentar la incorporación de iniciativas sostenibles en los campus universitarios españoles. A raíz de esto, en la actualidad existen 29 universidades

clasificadas en el *UI Green Metrics*. Sin embargo, persiste una brecha importante en la consolidación del rol activo de los *stakeholders* en el modelo de gestión de las universidades sostenibles. Alba-Hidalgo, (2015) señalaba que, en su estudio de 25 universidades españolas, solo la mitad de las mismas tienen una oficina específica para gestionar la sostenibilidad medioambiental, tomando en consideración que existen un total de 76 universidades públicas y privadas asociadas a la CRUE.

En consecuencia, esta tesis contiene un enfoque de *stakeholders*, y parte de la teoría de la administración definida por R. Edward Freeman como "cualquier grupo o individuos quienes puedan afectar o ser afectados en la consecución de los objetivos de la organización" (Freeman, 1984, p. 46). Está fundamentada, principalmente, en la orientación de '*stakeholder intelligence*', la cual propicia innovación, inclusividad, e interconexión de los grupos e individuos relevantes, para crear valor y un proceso estratégico efectivo que alcance las exigencias del medioambiente cambiante.

Basándose en los resultados de esta disertación, el investigador propone cinco variables (*1. La promoción de la sostenibilidad medioambiental a través de la misión de la universidad, 2. Evaluación del compromiso sostenible de la universidad, 3. Conocimiento y evaluación del desempeño de la universidad, 4. Gestión medioambiental del campus, 5. Las principales barreras para introducir acciones sostenibles en la universidad*), para ser integradas en dos principales aspectos del enfoque de *stakeholders*, específicamente en el análisis del comportamiento y perspectiva, así como en la actual contribución potencial de los *stakeholders*, para ser implementados en la estrategia de la universidad. Los principales hallazgos demuestran la necesidad de alinear la visión de la universidad, entre el plan estratégico central y las estrategias genéricas, así como una

mayor participación en el sistema de gestión y gobernanza, generando un espacio real para los intereses comunes de los *stakeholders*. La Figura 30 resume la propuesta.

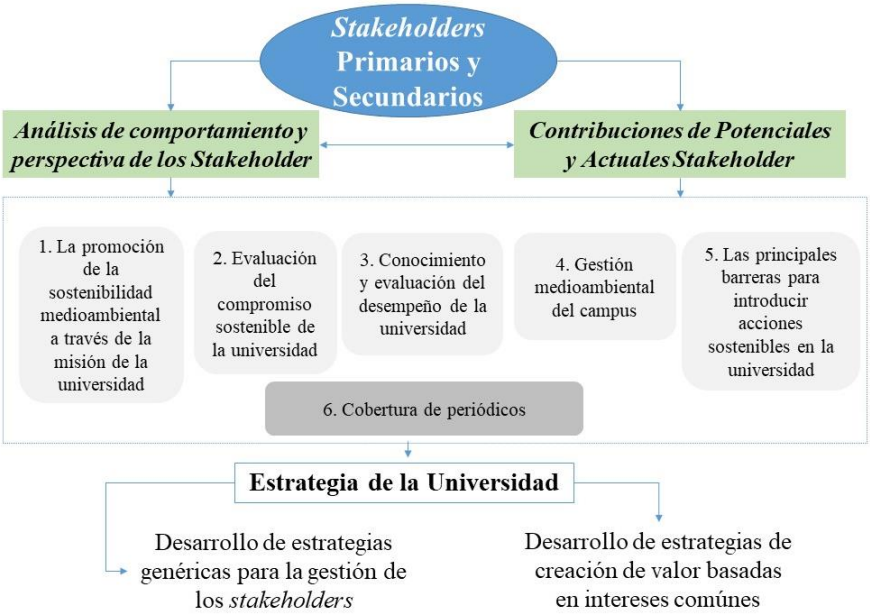


*Figure 30: Propuesta: Gestión universitaria para el desarrollo sostenible desde un enfoque de stakeholders.*

Por otra parte, un dialogo social, que involucra la conciencia y percepción del público en general, y una herramienta de evaluación para validar las principales actividades de la universidad, capaces de abordar y resolver un nuevo desafío en el horizonte de la globalización.

En el **Capítulo 3** se presenta la metodología, un método mixto definido por un enfoque de secuencia explicativa, en la primera y la segunda etapa del estudio, continuando la tercera fase de la investigación con una metodología cuantitativa, *topic modeling*. Los datos se organizaron de acuerdo con las tres preguntas principales de investigación: *(RQ1) ¿Cuáles son las percepciones claves de los stakeholders acerca de la sostenibilidad en las universidades españolas?, (RQ2) ¿Cómo está integrada la participación de los stakeholders directos en el modelo de gestión universitaria, para*

*implementar políticas para el desarrollo sostenible? (RQ3) ¿Cómo se reportaron y presentaron al público los temas de "sostenibilidad" y "universidades" en los periódicos españoles?*

En los siguientes capítulos, el investigador presentó las preguntas de investigación, la metodología y también presentó los resultados obtenidos de los *stakeholders* abordados: representante de estudiantes, expertos académicos, administradores ambientales, consejos sociales y la sociedad en general.

En el **Capítulo 4**, la investigación se centra en los resultados vinculados a la *RQ1* y *RQ2*, que tratan los cinco factores propuestos anteriormente, además de un sexto factor (contexto) que se agregó con el fin de identificar los conocimientos previos sobre el tema de los encuestados. El análisis se dividió en dos secciones principales: la primera parte proporcionó 'Las percepciones claves de los *stakeholders* sobre sostenibilidad en las universidades españolas' y, la segunda sección, incluyó 'La integración de la participación de los *stakeholders* directos en el modelo de gestión universitario para implementar políticas hacia el desarrollo sostenible.' Los hallazgos de este capítulo señalaron que las universidades deberían organizar actividades de sostenibilidad para potenciar las habilidades de los estudiantes relacionados con el comportamiento ambiental. Además, los *stakeholders* resaltan la incorporación y actualización de contenido curricular vinculado a la sostenibilidad; reconocen la importancia de que el contenido educativo debe ser más adaptable e inclusivo a los asuntos actuales desde un enfoque práctico.

También brindaron una gran preocupación por la conservación del medioambiente, la concienciación de la comunidad universitaria, y la relevancia de los canales apropiados de comunicación, para transmitir el mensaje medioambiental a la

comunidad, reconocido como un problema general en la estrategia de comunicación. Además, consideraron que la información oficial y no oficial es opaca y dispersa, siendo un desafío reforzar un cambio necesario hacia la sostenibilidad.

Además, los participantes creen que la misión universitaria está desconectada del enfoque medioambiental sostenible. Por lo tanto, una cuestión clave en la gestión, es la planificación estratégica como parte del compromiso institucional, la incorporación de indicadores de sostenibilidad ambiental en el plan estratégico y el cuadro de mando, en coherencia con las políticas y documentos estratégicos para implementar en las actividades cotidianas. La literatura muestra una dinámica de esquema general que integra las actividades principales de la universidad y el enfoque multidimensional sostenible, que debe proporcionar un sistema adaptable con una visión sincronizada, capaz de mantenerse durante un largo periodo.

El impacto de las actividades de investigación en la sociedad instalando acciones de sostenibilidad en la comunidad, y reconocer el potencial de la contribución académica para proporcionar buenas prácticas para la ciudad. En este sentido, los resultados de este estudio son relevantes para la gestión universitaria, sobre todo para el desempeño de actividades muy interconectadas con la creación de valor, la innovación, “la inclusividad y la interconexión de varios grupos relevantes, además de un adecuado direccionamiento de los problemas éticos” (Freeman et al., 2018, p.10).

Es conveniente destacar la brecha existente en la relación de los estudiantes con el resto de la comunidad, y la falta de espacios abiertos para involucrarlos a través de sus actividades diarias. Es así que, la principal preocupación principal del papel de los órganos de representación de la comunidad universitaria fue el compromiso fundamental de su labor en un plan más participativo. Por ello, el investigador sugiere un enfoque de

*stakeholders* para conseguir una participación más equilibrada, incrementar la utilidad de la transferencia de conocimiento de los *stakeholders*, y para lograr una mejor comprensión del ecosistema en un proceso creativo y de previsión hacia la sostenibilidad.

Los resultados de este estudio también señalan las iniciativas sostenibles más relevantes en las universidades españolas, como la digitalización, la gran influencia del entorno del campus, la gestión ambiental, el control de residuos, el consumo de energía y agua, las universidades saludables y la prevención de riesgos; además de un desafío latente en el uso de vehículos privados para llegar al campus, una colaboración activa entre universidades y gobierno.

En general, todos los grupos de *stakeholders* de este estudio expusieron temas e intereses directamente involucrados en la gestión y connotaciones estratégicas, una fuerte influencia en la organización y la cultura de la comunidad universitaria. En este sentido, '*stakeholder intelligence*' proporciona una perspectiva del valor de la percepción de los *stakeholders*, interpretada como información, que aporta una base sistemática para lograr una mejor relación entre los actores y la organización, para definir estrategias exitosas, y cumplir objetivos realistas que puedan adaptar la misión universitaria a las exigencias de un entorno cambiante.

En el **Capítulo 5**, el investigador analizó la cobertura de los periódicos españoles del año 2014 al 2017, relacionadas con las palabras claves 'sostenibilidad' y 'universidad'. Los hallazgos de este capítulo están vinculados a la *RQ3*.

La *Latent Dirichlet Allocation* (LDA) se utilizó para identificar los temas y su distribución en una gran colección de noticias. La búsqueda ha destacado la opinión de la sociedad en general sobre estos temas. Los resultados generados se dividen en dos secciones: primero, los principales temas informados y representados durante los cuatro

años y una revisión longitudinal de los mismos; en la segunda sección, se presenta la relación entre las composiciones de las agendas de los medios y la percepción de los *stakeholders* a la que se hace referencia en el Capítulo 4.

Los resultados muestran la participación estratégica de las universidades como un impulsor clave de los *Objetivos de Desarrollo Sostenible*, reflejados en su contribución en iniciativas prácticas hacia la sociedad. El área que predomina son los *proyectos de gestión ambiental* que se refieren al papel colaborativo de las universidades con instituciones públicas y privadas. En esta línea, la *Responsabilidad Social Corporativa (RSC) – Desarrollo de Innovación, Sistemas de Consumo Eficiente de Energía y Agua, Movilidad Urbana y Modos de Transporte*, son temas relacionados con la misión de la universidad, los *Programas de Educación Superior e Investigación*. Estos temas fomentan el debate sobre la innovación social y educativa para adaptar el aprendizaje a las necesidades del entorno actual. Los hallazgos detallaron la necesidad de la educación ambiental para adaptarse mejor a las demandas actuales y futuras.

La interconexión entre sostenibilidad y universidad también llama la atención a la *Participación o Colaboración del Gobierno Universitario* como actores clave para apoyar y desarrollar soluciones concretas, ya que se espera que la concepción y la implementación surjan de los recursos y la voluntad del gobierno. Esto representa un escenario donde la universidad materializa la trasformación de la sociedad local, regional, nacional e internacional, demostrada en el tema *Modelo de Economía para una Sociedad Responsable*. Existen innumerables publicaciones sobre la colaboración universitaria con la sociedad, (Salvioni et al., 2017) que comparten la importancia del papel de la educación superior en la creación y distribución de conocimiento socialmente relevante, además de hacerlo con anticipación para desempeñar un papel proactivo y comprometido

en la transformación y cambio positivo de las sociedades. Además (Larran Jorge & Andrades Pena, 2017) sugieren la importancia de implementar un enfoque de *stakeholders* múltiples, en donde participen todos los grupos de *stakeholders*. De hecho, un enfoque de gestión adecuado depende de la visión compartida de los líderes universitarios y del rol activo de los *stakeholders*, para fomentar la sostenibilidad en la cultura universitaria.

Por otra parte, las *Políticas Gubernamentales* están aplicando cada vez más acuerdos, cumbres y legislaciones para mejorar y ayudar a movilizar recursos, así como esfuerzos para satisfacer las crecientes demandas. En este contexto, desde la percepción de los *stakeholders*, estas acciones han sido un factor de impulso para lograr la mayoría de las iniciativas ambientales tradicionales en el campus. Sin embargo, estos esfuerzos aún no son suficientes para conseguir un campus sosteniblemente competitivo, ni tampoco para integrar el elemento de sostenibilidad en la misión central de la universidad. Por lo tanto, esta investigación pretende que la sostenibilidad y el contenido universitario implementen un análisis de contenido de la percepción social, para mejorar la capacidad de los profesionales y científicos a la hora de comprender los problemas y las necesidades plasmadas por las agendas de los medios de comunicación.

Más adelante, el *Presupuesto Financiero Público o Financiación* contextualizó los efectos de las influencias externas y la prioridad de que el gobierno incluya el ámbito de la sostenibilidad en la educación, en las operaciones del campus, en la investigación y en la divulgación de esta a la comunidad. En ese contexto, la dimensión económica ha estado latente como un desafío emergente y, a menudo, como una limitación en el sistema de educación superior.

En este sentido, una implicación práctica es propiciar que los formuladores de políticas definan las mejores prácticas para la gestión de la sostenibilidad en la universidad. Recomendaciones para estimular a las universidades para que emprendan mejoras en los principios de sostenibilidad. Una base de conocimiento de la innovación en un contexto local y global, para guiar estrategias futuras que aceleren las respuestas para enfrentar los desafíos sostenibles a tiempo. Además, implementar un enfoque de *stakeholders* para promover la pertenencia de los *stakeholders* y aplicar el proceso de planificación estratégica organizacional.

Sería recomendable, para las autoridades universitarias, utilizar las percepciones de la sociedad basadas en la cobertura de periódicos como una herramienta de autoevaluación, para generar información relevante para las nuevas agendas de investigación. De este modo, la implementación, enfocada en actividades sostenibles centradas en el intercambio entre universidades y entidades externas, podría aportar un potencial de competitividad en la educación superior. Los resultados deberían actualizarse como un proceso continuo, aparte del enfoque *stakeholders*, para que las universidades puedan priorizar sus líneas estratégicas y lograr mejoras en su sistema.

## 6.2 CONCLUSIONES GENERALES

De acuerdo con la estructura desarrollada en esta tesis doctoral, a continuación se resumen los aspectos generales del estudio y las conclusiones en relación con los objetivos definidos inicialmente, a partir de la recapitulación de las evidencias obtenidas. De este modo, en los capítulos precedentes se establecieron los objetivos principales: identificar la percepción clave de los *stakeholders* sobre sostenibilidad en las universidades españolas, identificar la integración de la participación de los *stakeholders*

directos en el modelo de gestión universitaria para desarrollar políticas hacia el desarrollo sostenible, y analizar los temas sostenibilidad y universidades informados y retratados por los periódicos españoles.

Para poder llevar acabo el objetivo principal de este estudio, se ha establecido un diseño metodológico mixto con un enfoque explicativo, que combina métodos cuantitativos y cualitativos. En concreto, en la primera etapa exploratoria se aplicó un análisis estadístico descriptivo, que permitió establecer el punto de partida para obtener datos claves como las principales características de los grupos participantes en el estudio, además de un mayor dominio sobre el tema. Es así como en la segunda etapa de la investigación, *focus group* (grupos de discusión), entrevistas a profundidad y, finalmente, en la tercera etapa, se ejecutó un *probabilistic topic modeling* (modelado probabilístico de tópicos o grupo de palabras). De esta manera el estudio se consolida desde distintas técnicas de investigación, articulando las tres principales preguntas de investigación presentadas a continuación:

*(RQ1) ¿Cuáles son las percepciones claves de los stakeholders acerca de la sostenibilidad en las universidades españolas?*

*(RQ2) ¿Cómo está integrada la participación de los stakeholders directos en el modelo de gestión universitaria para implementar políticas para el desarrollo sostenible?*

*(RQ3) ¿Cómo se reportaron y presentaron al público los temas de "sostenibilidad" y "universidades" en los periódicos españoles?*

Las aportaciones más relevantes centradas en el primer propósito de este estudio son:

- Tomando en consideración que las universidades son organizaciones dinámicas y con alto potencial de influencia en la comunidad, los *stakeholders* implicados

perciben que las universidades deberían llevar acabo revisiones y modificaciones periódicas del sistema de enseñanza, incorporando contenido actual relacionado con temas sobre la sostenibilidad medioambiental.

- Con respecto a las actividades de enseñanza, en similar nivel de interés, los participantes opinan que se debería realizar actividades para incentivar a los estudiantes en el desarrollo de sus competencias y comportamiento hacia el medioambiente.
- La importancia de crear y promover institutos específicos de medioambiente y sostenibilidad, así como difundir actividades de investigación sobre temas de sostenibilidad con impacto en la sociedad.
- De forma específica, los estudiantes determinan el déficit de información sobre los proyectos y actividades académicas que promuevan la innovación de los estudiantes en temas relacionados con el desarrollo sostenible.
- Los representantes estudiantiles admiten la importancia de introducir estos temas en sus carreras desde una perspectiva práctica y no solo teórica, es decir, una adaptación continua en la formación, capaz de generar soluciones desde la misión principal de la universidad, hasta el obtener un impacto a largo plazo en sus futuros lugares de trabajo.
- Desde la perspectiva de los directivos universitarios vinculados a esta área, se concuerda en la relevancia de hacer explícito en el contenido académico el alcance de los temas de desarrollo sostenible, proyectando estudiantes con mayor sensibilidad a los problemas medioambientales.

- Una de las principales debilidades en el sistema universitario con base en la percepción de los participantes, es la implementación curricular de temas y proyectos sostenibles, siendo esto un reto para la incorporación en su principal misión.
- Los temas más significantes para los *stakeholders* universitarios son: la conservación del medioambiente, la poca sensibilización de la comunidad universitaria, especialmente la falta de participación de estudiantes, los medios y canales de comunicación deficientes para divulgar temas medioambientales, una preocupación latente por las dimensiones académicas y, finalmente, la movilidad, junto con sus modos de transporte para llegar a los campus universitarios. En particular, los expertos académicos destacan en sus opiniones la falta de una planificación estratégica como parte de un compromiso institucional.
- En términos de gestión medioambiental, los líderes de estudiantes han identificado la digitalización como una de las mejores prácticas. Sin embargo, el uso del vehículo privado en los campus señala es un reto constante a diferentes niveles. En general, existen prácticas tradicionalmente estables, como el control de consumo de agua, energía y manejo de desperdicios. Sin embargo, la compra sostenible, las universidades saludables y la prevención de riesgos son iniciativas en proceso de evolución.
- Por otro lado, los resultados muestran que las universidades deberían dar mayor relevancia a incluir en sus reportes anuales indicadores medioambientales, un plan estratégico junto con su cuadro de mando integral (*scorecard*), accesible a la comunidad. Además de protocolos de acción específicos para cada área, como el

manejo del agua, residuos y movilidad, para conseguir de este modo ser una influencia en las comunidades, propiciando la participación activa.

- Dentro de los retos más destacables para todos los grupos de *stakeholders* está la existencia de 'otras prioridades' y, especialmente para los consejos sociales y demás grupos, el factor financiero. Sin embargo, los líderes estudiantiles señalan también la estrategia de abordar estos temas en la comunidad universitaria.

Estas conclusiones están en nexo con la segunda pregunta de investigación en donde las principales contribuciones son:

- Los *stakeholders* evidencian una brecha considerable en la implicación de su participación en el modelo de gestión universitaria para implementar políticas para el desarrollo sostenible, especialmente los líderes estudiantiles, quienes señalan la falta de espacios abiertos para el diálogo y el empoderamiento de la vida universitaria, sin limitarse a las actividades tradicionales. Por otro lado, el grupo de expertos académicos y responsables de eco campus concuerdan con la dispersión de las actividades, tanto académicas, como de investigación y de gestión, sin alineamiento a un plan estratégico integrador de todos los ámbitos, capaz de empoderarse en la cultura de la institución.
- Los agentes implicados asumen el potencial de su conocimiento, influencia y rol activo para contribuir a un plan de sostenibilidad para la universidad. Sin embargo, los mismos agentes sugieren una mayor integración de esfuerzos económicos, de planificación, y recursos, marcando una misma visión institucional capaz de mantenerse y evolucionar, adaptándose a los retos actuales.

En referencia a la última pregunta de investigación del estudio se concluye que:

- La opinión general de la sociedad sobre sostenibilidad y universidades se centra en nueve temas, más frecuentes en la composición de las agendas de las noticias de los periódicos españoles en los años 2014, 2015, 2016 y 2017 (en el año 2017 de enero a junio). Estos son, clasificados por su relevancia: (1) ODS - Proyectos de gestión medioambiental, (2) Políticas de gobierno, (3) Modelo Económico para una sociedad responsable, (4) Participación y colaboración del gobierno universitario, (5) Programas universitarios e investigación, (6) Presupuesto público y financiación, (7) RSC-Desarrollo e innovación, (8) Sistemas de consumo eficiente de energía y agua, (9) Movilidad Urbana y modos de desplazamiento.
- En base a los resultados, la prensa española describe un debate social, concebido por la interacción de los grupos de agentes implicados (la sociedad) y su preocupación por la participación en la misión tradicional del sistema universitario, además de incluir matices de actividades innovadoras para difundir y consolidar el verdadero rol de la universidad en un contexto local, regional, nacional e internacional, desarrollando mejores soluciones para un medioambiente sostenible junto con la sociedad.
- Se propone que la sostenibilidad en las universidades requiera considerar la inclusividad, la participación y las interacciones de todas las partes interesadas, incluida la sociedad, obteniendo sus opiniones como un potencial innovador para la creación de valor en la gestión del gobierno universitario, para maximizar así su contribución hacia la sociedad.
- Este estudio demuestra que el análisis de contenido de la percepción social sobre sostenibilidad y universidades podría mejorar la capacidad de los profesionales,

científicos y legisladores, para comprender los problemas y las necesidades informadas por las agendas de noticias, basada en la vinculación de estos temas relevantes y las percepciones recabadas del resto de *stakeholders*, siendo así una guía de autoevaluación e implementación en un proceso continuo de innovación en la administración de universidades.

## 6.3 LIMITACIONES E INVESTIGACIONES FUTURAS

Este estudio se centró en la percepción de los *stakeholders* de universidades españolas y la dimensión de desarrollo sostenible. Los grupos de *stakeholders* investigados fueron representantes de estudiantes, expertos académicos, gestores ambientales y los consejos sociales. El alcance de los grupos de *stakeholders* fue limitado, debido a la cantidad de universidades en el país y los extensos grupos de *stakeholders* directos e indirectos. Por lo tanto, los estudios a futuro podrían centrarse en los grupos de *stakeholders* que no se incluyeron en este estudio, como el personal administrativo, ya que tienen un vínculo muy estrecho con el proceso de gestión universitaria.

Investigaciones adicionales podrían también examinar las razones que hay detrás de los porcentajes mínimos de respuestas negativas de las percepciones de los interesados sobre los diferentes ítems de las encuestas aplicadas. Esto podría ser particularmente interesante para conseguir una mejor comprensión de la conciencia ambiental.

Otra limitación relacionada con el proceso de recopilación de datos en la primera y segunda etapa de investigación fue el acceso a los ejecutivos, autoridades o representantes universitarios de alto nivel, la distancia geográfica y el tiempo. Sin

embargo, la tesis se centró en los actores más estratégicos del sistema. Por lo tanto, para futuras investigaciones, las herramientas cualitativas y cuantitativas aplicadas se podrían replicar para analizar las diferencias y las características de los *stakeholders* universitarios de diferentes ubicaciones geográficas a nivel regional, europeo e internacional, así como un enfoque longitudinal para definir herramientas de *benchmarking* entre las universidades y actores cruciales como la CRUE.

Durante la tercera etapa del estudio, en el análisis de cobertura periodística, el investigador definió límites necesarios para una revisión de datos a gran escala, incluyendo los parámetros de palabras clave "sostenibilidad" y "universidad". En las futuras investigaciones sería interesante ampliar los parámetros para incluir palabras clave adicionales para mejorar la precisión de los datos. Además, se podrían definir listas de palabras clave específicas, relacionadas con las limitaciones o fortalezas de las universidades en diferentes áreas. Adicionalmente, un análisis sentimental de los periódicos y redes sociales también podría ser una herramienta crucial, ya que la gran mayoría de la comunidad universitaria son estudiantes, *stakeholders* activos en estos medios.

Este nuevo método de análisis de *big data* permitirá un análisis más profundo de las diferentes estrategias de crecimiento y sus resultados sobre el desempeño de la universidad. De hecho, en un futuro las universidades podrían implementar inteligencia artificial en el proceso de gestión, para explorar las necesidades de la sociedad o asuntos en tiempo real en diferentes áreas en las que se pretenda implementar en el sistema educativo, examinar los motivos de los temas pendientes en la investigación y, de ese modo, actualizar los programas académicos.

A pesar de la limitación en el alcance del estudio, este proporciona una plataforma para futuras investigaciones de la gestión universitaria y universidades sostenibles, para replicar y mejorar el proceso en otras instituciones de educación superior a nivel mundial.

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## ANNEXES

The following annexes only show the first page; the full version will be available in the UAM repository.

### Annex 1. The protocol of Focus Group and Depth Interviews in Spanish

**Hoja de Información para el participante**

Usted ha sido invitada a participar en el estudio titulado "La sostenibilidad energética y del transporte en los campus universitarios españoles: percepciones y valoraciones de los agentes sociales" El propósito de este documento es que usted disponga de la información necesaria para decidir aceptar o rechazar su participación en este estudio. Por favor, no dude en plantear cualquier duda que pueda surgirle durante la lectura del mismo. Muchas gracias por su colaboración.

Título del subproyecto: "La investigación en eficiencia energética y transporte sostenible en el medio urbano: análisis del desarrollo científico y la percepción social del tema desde la perspectiva de los estudios métricos de información" CSO2014-51916-C2-1-R

Persona responsable del estudio: (es el IP, es decir la persona que dirige el proyecto)

Código del proyecto: 2015/00187/001

**IP**: Elías Sanz

- ¿En qué contexto se realiza el estudio?

Universitario, a nivel estatal, en España.

- ¿Qué objetivo tiene el estudio?

Contribuir al conocimiento de las percepciones de los diferentes agentes sociales de las universidades españolas sobre el compromiso, capacidades y actuaciones científicas, tecnológicas, y sociales de estas instituciones, relativas a la eficiencia energética y el transporte sostenible.

- ¿En qué consistirá mi participación?

Contestar un breve cuestionario y participar en el *focus group*/entrevista, que recoja tus opiniones sobre las acciones y políticas de sostenibilidad energética y del transporte en los campus universitarios españoles y el caso de la UAM.

- ¿Cómo se protegerá mi anonimato?

Toda la información que usted proporcione será tratada de manera confidencial. En la publicación de la investigación o de artículos relacionados con la misma no figurarán los nombres de las participantes u otros datos que pudieran identificarla. Todos los documentos relacionados con el estudio serán guardados en archivos protegidos a los que sólo tendrá acceso la investigadora/o que realiza este estudio.

- ¿Con quién puedo contactar si me surgieran dudas o cualquier otra cuestión referida a este estudio?

Ante cualquier duda o cuestión relativa a este estudio puede dirigirse a: (datos de contacto, nombre, correo, tlf.)

## Annex 3. Questioner-Surveys for Social Councils



LimeSurvey

No hay errores de sintaxis detectados en esta encuesta.

# Fichero lógico para Encuesta #[769426]: CUESTIONARIO CCSS- SOENTRAN

| | |
|---|---|
| Introducción: | Se pretende conocer la opinión de los miembros del Consejo Social - que es el órgano de relación de la Universidad con la sociedad y de la supervisión de su actividad económica - sobre **el esfuerzo que debe realizar la universidad en el ámbito de la sostenibilidad ambiental, teniendo en cuenta la limitación de recursos que disponen en general las universidades**.<br><br>---------- |
| Mensaje de despedida: | **GRACIAS POR SU COLABORACIÓN** |

| # | Nombre [ID] | Relevancia [Validación] (Valor por defecto) | Texto [Ayuda] (Consejo) |
|---|---|---|---|
| G-0 | [GID 21] | 1 | 1. Valores generales sobre la sostenibilidad ambiental |
| Q-0 | **G1Q00001**<br>[QID 273]<br>Lista (Desplegable)<br>[!] | 1 | Para Ud. la conservación del medio ambiente es...<br><br>**Atributo de pregunta** / **Valor**<br>statistics_showgraph / 1 |
| A[0]-1 | **A1** | [VALUE: 0] | Un problema inmediato y urgente |
| A[0]-2 | **A2** | [VALUE: 0] | Más bien un problema de cara al futuro |
| A[0]-3 | **A3** | [VALUE: 0] | Una moda pasajera |
| A[0]-4 | **A4** | [VALUE: 0] | No le parece un problema |
| | | | |

## Annex 4. Questioner-Surveys for Students Representatives – CREUP



# Cuestionario

Con este estudio se pretende conocer la opinión de los representantes estudiantiles sobre política y/o acciones de sostenibilidad ambiental en su Universidad. (ES-ES 28.03.16)

*Obligatorio

## 1. Valore los aspectos generales sobre la sostenibilidad ambiental.

1. **1.1. La importancia de la conservación del medio ambiente.**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| No le parece un problema | ◯ | ◯ | ◯ | ◯ | ◯ | Un problema inmediato y urgente |

2. **1.2. ¿Cómo calificaría el estado del medio ambiente en España?**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Es muy malo | ◯ | ◯ | ◯ | ◯ | ◯ | Muy bueno |

3. **1.3. En general en materia de medio ambiente, ¿cómo considera usted que está informado?**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Nada informado | ◯ | ◯ | ◯ | ◯ | ◯ | Muy bien informado |

4. **1.4. Para usted personalmente, ¿cuál es la importancia de que su universidad se implique en la sostenibilidad ambiental?** *
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Nada importante | ◯ | ◯ | ◯ | ◯ | ◯ | Muy importante |

## 2. Valore el compromiso de su universidad con la sostenibilidad ambiental

## Annex 5. Questioner-Surveys for Students Representatives and Academic Experts



# Cuestionario

Con este estudio se pretende conocer la opinión de política y/o acciones de sostenibilidad ambiental en su Universidad. (ES-EX03.16)

*Obligatorio

## 1. Valore los aspectos generales sobre la sostenibilidad ambiental.

1. **1.1. La importancia de la conservación del medio ambiente.**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| No le parece un problema | ◯ | ◯ | ◯ | ◯ | ◯ | Un problema inmediato y urgente |

2. **1.2. ¿Cómo calificaría el estado del medio ambiente en España?**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Es muy malo | ◯ | ◯ | ◯ | ◯ | ◯ | Muy bueno |

3. **1.3. En general en materia de medio ambiente, ¿cómo considera usted que está informado?**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Nada informado | ◯ | ◯ | ◯ | ◯ | ◯ | Muy bien informado |

4. **1.4. Para usted personalmente, ¿cuál es la importancia de que su universidad se implique en la sostenibilidad ambiental?** *
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Nada importante | ◯ | ◯ | ◯ | ◯ | ◯ | Muy importante |

## 2. Valore el compromiso de su universidad con la sostenibilidad ambiental

## Annex 6. Questioner-Surveys for Environmental Managers



# Cuestionario

Con este estudio se pretende conocer la opinión de política y/o acciones de sostenibilidad ambiental en su Universidad. (TC03.16)

*Obligatorio

## 1.Compromiso de su universidad con la sostenibilidad ambiental

1. **1.1. ¿Su universidad ha realizado adhesiones a los pronunciamientos internacionales o nacionales en materia social y/o medioambiental (Pacto Mundial de la ONU, etc.)?**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Muy poco | ◯ | ◯ | ◯ | ◯ | ◯ | Muy de acuerdo |

2. **1.2. La sostenibilidad ambiental es una prioridad, con su correspondiente esfuerzo presupuestario, de su universidad.**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Muy poco | ◯ | ◯ | ◯ | ◯ | ◯ | Muy de acuerdo |

3. **1.3. Elabora algún documento de rendición de cuentas (memoria de actividades de las unidades, informes del curso académico, etc.), que incluya al menos aspectos ambientales y/o sociales y que esté a disposición pública.**
   *Marca solo un óvalo.*

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Muy poco | ◯ | ◯ | ◯ | ◯ | ◯ | Muy de acuerdo |

4. **1.4. En el plan estratégico y en el cuadro de mando existen indicadores de sostenibilidad ambiental de la universidad**
   *Marca solo un óvalo.*

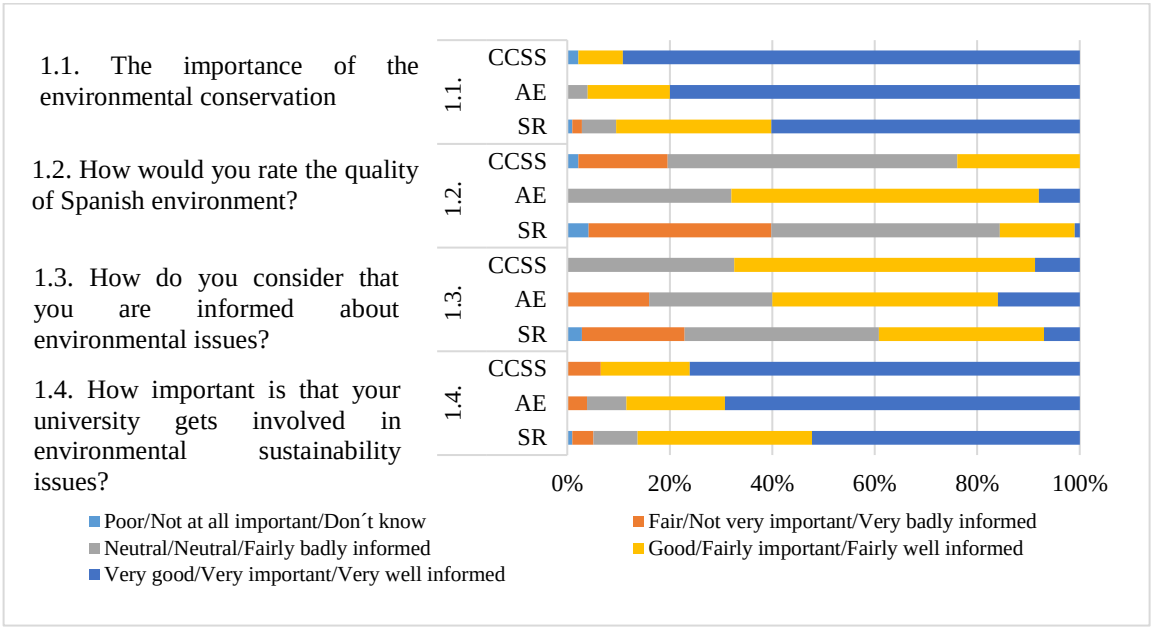
| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Muy poco | ◯ | ◯ | ◯ | ◯ | ◯ | Muy de acuerdo |

5. **1.5. Estos indicadores de seguimiento son públicos y se encuentran fácilmente accesibles**
   *Marca solo un óvalo.*

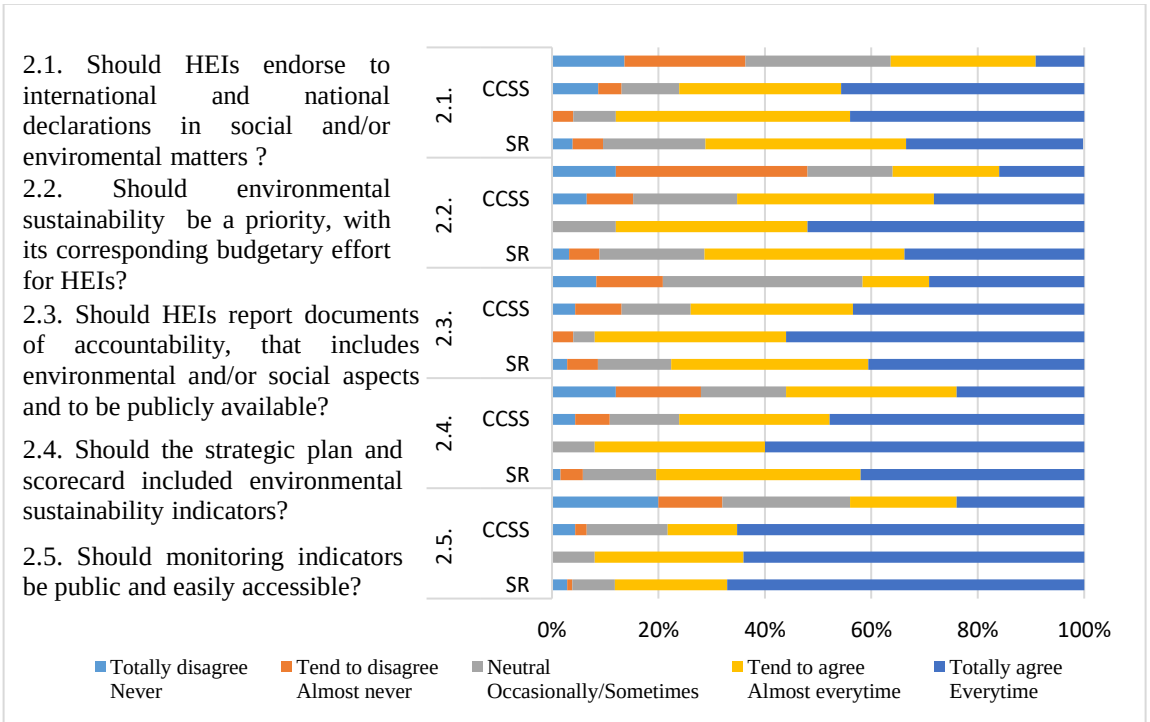
| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Muy poco | ◯ | ◯ | ◯ | ◯ | ◯ | Muy de acuerdo |

## Annex 7. Statistical Analysis - Results of the Surveys

1. Framework




2. Assessment of Universities' sustainable commitment



## Annex 8. Transcription Focus Group nr.1: Students Representatives ST_RECO17

### Transcripción del *focus group* de representantes de estudiantes, Facultad de Ciencias Económicas y Empresariales

**Participantes:** 7 **Representante de los estudiantes:** (Participante 2) delegado del grupo 227, delegado de segundo de economía, portavoz del consejo de estudiantes y de APT; (participante 1), delegado del 236 de economía y delegado de toda la titulación de economía; (participante 3), delegado de quinto del grupo de mañana y titulación en derecho y ADE, (participante 4) APT; (participante 5) APT; (participante 6), delegada 124 ADE; (participante 7), delegada del 336 de turismo, delegada de titulación y representante del consejo de estudiantes).

**Fecha: 05 de abril de 2017**

**Moderadora: ¿Qué es para ustedes una universidad sostenible? ¿Qué concepto os viene a la mente cuando mencionamos Green campus, Eco campus?**

Participante 2: Sobre todo, energéticamente sea eficiente, por ejemplo, lo que hacen con los radiadores de tenerlos permanentemente encendidos…

Participante 1: Por las mañanas porque por las tardes igual nos morimos del frío.

Participante 4: Depende del aula, porque hay otras que siguen encendidos con esa temperatura.

Participante 1: Yo todos los años que he estudiado de tarde, por las tardes nos congelamos en invierno, está la gente con chaquetas porque no ponen los radiadores.

Participante 2: El ala que…

**Moderadora: alguna otra idea**

Participante 3: Para mí un campus es básicamente en el que no dependa para nada de energía exterior, que sea capaz de obtener la energía, para que no dependa de la red eléctrica digamos.

Participante 4: Que fomente el uso de ciertas energías renovables, en los mismos alumnos que haya manera para no depender de las energías no renovables.

Participante 3: Eso en cuanto a energía, pero claro podemos tener en cuenta en el ámbito de los transportes.

Participante 7: Que tenga también todas las cuentas de los gastos económicos de ineficiencia de las energías que están usando y pues no existe la contabilización de la contaminación que se pueda crear en el campus, que esté controlado el gasto energético de la zona.

**Moderadora: Para la universidad, ¿Qué piensan ustedes que es una universidad sostenible?**

Participante 3: Mínimo coste energético posible

Participante 5: Tiene que ser parte, como la universidad es un centro educativo, tiene que ser parte de la práctica que tiene que ser, que es lo distintivo que tiene de ser universidad respecto a otras cosas es que eduque la importancia de eso, nosotros que estudiamos economía, además en importante que los análisis que haces como economista, tengas en cuenta el impacto ecológico que tienes, al final también el gasto en ese aspecto es un gasto

**Annex 9. Transcription Focus Group nr.3: Students Representatives ST_RSE**

**Trascripción - *Focus group* de la Escuela Superior Politécnica, UAM**

**Participantes: 8 Representantes de Estudiantes en diferentes asociaciones internas y externas**

**Fecha: 21 de abril de 2017**

**Moderadora: ¿Qué es una universidad sostenible?**

Estudiantes: Yo creo que universidad sostenible incluye dentro varios valores por ejemplo universidad sostenible es utópica, por ejemplo, universidad autosuficiente que generara toda la energía que consume, además de no solo generar lo que consume sino hacerlo de manera muy eficiente, es decir con una contaminación mínima y una huella ambiental muy reducida, creo esos son los dos valores más importantes.

La que tenga en su unidad de gobierno medidas de sostenibilidad, ecologismo de forma que ayuden a la universidad en todo sobre medioambiente.

**Moderadora: ¿Qué impacto ecológico creen que puede tener las universidades dentro de su día a día?**

Estudiantes: Yo creo que bastante porque el hecho de que esté alejada de Madrid, y el centro provoca que la gente vaya en coche, o tenga que coger bus, pero por comodidad la gente suele coger el coche entonces eso yo creo es bastante grave y hace que se contamine mucho.

Justo por donde dice María, creo que justo en esta universidad, al ser un campus aislado a diferencia de la Complutense o la Politécnica no tiene una comunicación de transporte público tan eficiente a lo mejor como otras universidades, lo cual implica que el transporte sea un punto crítico dentro de lo que es la sostenibilidad de esta universidad y además por ejemplo el tema de los automóviles y desplazamiento, genera una cantidad de polución que repercuten una contaminación muy alta, por ejemplo sin ir muy lejos ayer en una charla nos hablaban de la polución y se generan cantidades... en mi opinión debería ser un punto clave dentro de las acciones dedicadas a sostenibilidad el mejorar el transporte hasta el campus.

**Moderadora: Algún punto crítico que la universidad deba trabajar, que no se ha realizado nada.**

Estudiantes: Yo creo que la gestión para la calefacción de los edificios está mal gestionada en particular en ESP porque la diferencia entre el interior y el exterior a lo mejor es de 10 grados fácilmente y eso.

En laboratorios propiamente en verano puedes tener 15 grados puesto el A/C y afuera 30, y son laboratorios pegados unos con otro, entonces una relación centralizada no se puede especificar que temperatura quieres en cada sector de la universidad.

**Moderadora: ¿Están familiarizados con el concepto de eco campus o Green campus de la Autónoma?**

**Annex 10. Transcription Focus Group nr.4: Students Representatives ST_R Univ. Gov_Con.**

**Transcripción – *Focus group* de Representantes del Consejo de Gobierno, UAM**

**Participantes: 5 Representantes estudiantiles del Consejo de Gobierno de la UAM y miembros de CREUP**

**Fecha: 31 de marzo de 2017**

**Moderadora: ¿Qué es eco campus o sostenibilidad universitaria? ¿Cómo lo relacionan?**

Estudiantes: Para mí la sostenibilidad está dentro de las decisiones de la universidad y es de las primeras cosas que tienen en cuenta y a la hora de reciclaje y de más a lo que se refiere lo de Green universidad y bueno lo del reciclaje, que se aporten medidas, como el transporte que hemos visto en la encuesta, pero como un poco más general una de las mayores prioridades que debería tener la universidad como el resto.
Para mí un eco campus sería una universidad que promueve ciertas actitudes, como por ejemplo lo que es el reciclaje o el uso del transporte, a lo mejor facilitar otros tipos de transporte, porque teniendo en cuenta que esta universidad está bastante alejada de todo pues sí que la gente coge mucho el coche cuando puede ese tipo de cosas.
Yo también creo que no solo se podría enfocar a la eficiencia energética teniendo siempre en cuenta la sostenibilidad económica y todo aquello. El promover también actitudes de salud, promover también una educación para la salud en la que no solo seamos amigables con el medioambiente sino con nosotros mismos como seres humanos, hay muchos proyectos de eco campus en los que también se incluyen medidas como que las máquinas expendedoras tengan comida saludable, que no se pueda fumar dentro de lo que viene siendo el campus, no solo promover la sostenibilidad ambiental, sino también la de la salud.
**Moderadora: Cuando hablamos de las prácticas como el reciclaje, ¿ustedes lo viven en la universidad? ¿Qué tan cercanos son a este tipo de iniciativas?**
Estudiantes: Yo no sé si es en todas las facultades porque no me muevo mucho tampoco por la universidad, pero en mi facultad hay papeleras para envases sí.
Yo creo no hay problema en poner el contenedor apropiado, y creo es más un problema de educación, porque al fin y al cabo siempre nos han puesto el contenedor adecuado, tanto verde, azul, como de orgánico y yo creo el problema es que la gente aun así no se mueve.
No sé si será pereza de conocimiento o algo parecido, es que todos lo hemos hecho alguna vez que hemos tirado algún sitio que no debería aun sabiendo, entonces yo creo que sería más de educación y cultura.

**Annex 11. Transcription Focus Group nr.5: Students Representatives ST_R**

**Univ.Gov_Con.**

**Transcripción del *focus group* SDSN Youth España**

**Participantes: 5 Representantes de estudiantes, UPM: Participante 3, UC3M; Participante 4; UPM: Participante 5; UC3M; Participante 2; UAM: Participante 1.**

**Fecha: 24 de abril de 2017**

**Moderadora: ¿Cuál es el concepto que tienen de que es una universidad sostenible, eco campus, o si están familiarizados con esta terminología de Green campus?**

Participante 1: Personalmente yo considero que un campus sostenible o una universidad sostenible se basa en una coherencia entre su políticas de sostenibilidad y que han ido evolucionando desde hace mucho tiempo en todas las universidades españolas, y bueno hablando propiamente de la UAM con las actividades y las prácticas que tienen cada una de sus facultades, ya que cada una trabaja independientemente, pero considero que cada facultad poder tener prácticas sostenibles tanto políticamente como para los estudiantes, porque podemos decir que tenemos un campus sostenible, tenemos un parking lleno de paneles solares, pero luego vemos que en cada cafetería se hace un consumo de plástico increíble, entonces ahí el equilibrio de sostenibilidad, la balanza de sostenibilidad se desequilibra un poco, en cuanto a la oficina de eco campus creo que en todas las universidades siempre hay una oficina verde o llamada eco campus que se encarga sobre todo de evaluar los temas de sostenibilidad pero en algunos casos se queda simplemente en nombre y no tiene una repercusión en el estudiantado de la comunidad universitaria, ya que pocas personas conocen ese tipo de oficina verde o de eco campus, en conclusión considero que un campus verde va desde una políticas escritas, como unas prácticas de la comunidad universitaria, de un transporte sostenible, y de energía y agua responsable

Participante 2: Yo añadiría que es importante también que una institución como es una universidad, también esté al tanto de los estudios que se hacen, que van saliendo para adaptar ese concepto de sostenibilidad y de ser verde a los criterio que se van descubriendo y adaptar a las nuevas tecnologías donde también creo es importante tener presente que cambia todos los días y que hay que estar enterado y que si además por encima acoges ya al resto de alumnos, los estudiantes que se van descubriendo fenomenal.

**Annex 12. Transcription Focus Group nr.6: Vice-Chancellors**

**Transcripción del *focus group* de Vicerrectores-UAM**

**Participantes: Vicerrectora de Estudios: V.E, Vicerrector de Campus y Sostenibilidad: V.C, Vicerrector de Estrategia y Calidad, UAM**

**Fecha: 08 de mayo del 2018**

**A. Teniendo como referencia los datos de Green Metrics de los últimos años respecto al apartado educación. ¿Qué opina sobre la cantidad de títulos que se ofrecen en esta área?**

**En los últimos 4 años, la universidad ofrece 632 sobre sostenibilidad un total de 3678 cursos en la UAM.**

V.E. El concepto de es difuso de sostenibilidad entonces probablemente hay muchos contenidos dispersos en muchos títulos y muchos ni siquiera son conscientes de que los tienen, porque es algo en lo que por ejemplo, estamos revisando todas las guías docentes y viendo cuales son los contenidos hacen referencia a todo lo que tiene que ver con accesibilidad, diseño universal, objetivos de desarrollo sostenible y lo cierto es que hay en muchos centros, hay más de lo que en principio se sabía que había pero también hay mucho por hacer sobre, todo porque creo que no tenemos muy claro cuales la noción para enseñarla o exactamente ¿dónde encajamos? entonces muchas veces no se hace explícito.

**A. ¿Es muy difícil concretar el número de cursos?**

V.E: Es muy difícil

A. **¿Cómo mejorar o cómo podemos mejorarlos?**

V.E: Sí, yo creo también hay una cierta resistencia, es como un ideal a todo el mundo le parece bien pero luego cambiar las practicas individuales es más difícil.

**A. ¿Qué opinas sobre cómo se han asumido los contenidos relacionados con sostenibilidad, responsabilidad social universitaria, o empresaria o es en las diferentes facultades?**

V.E: Yo creo hay cada vez más una toma de conciencia mayor respecto a que es necesario, creo que falta dar el paso a que sea real, creo no estaba en la agenda inicial entonces no es…

V.C: Completamente de acuerdo, cuando yo llegue dijimos para las métricas de GreenMetrics teníamos colocado un porcentaje, que no sé cómo se había calculado. Se habría calculado analizando un poco los títulos que teníamos y se había estipulado, las titulaciones que tienen que ver con  se incorporaban y las que no tenían que ver con  no las incorporaban, claro los ODS de los 17 ODS hay muchas más cosas, una variedad muy amplia. Hay igualdad de género en todos nuestros títulos suele haber algún tipo de giño, incluso contenido dentro de las competencias general de los grados, o acabar con la pobreza, o acabar con el hambre. El tema de sostenibilidad , energéticos, yo casi pensaba hacer la lectura al revés, ¿Cuáles de nuestras titulaciones no incluyen de forma explícita alguna relación con los ODS?  Y el ejercicio está por hacer, pero yo entiendo que serían muy poquitas.

V.E: Lo que estamos haciendo empezó, cuando nos mandaron Cecilia Simón, una serie de informes, porque hay algunos que ya está hecho a modo casi de libro blanco.

## Annex 13. Transcription Focus Group nr.7: Eco-Campus Team

### Transcripción del *focus group* de los miembros de Eco-campus, UAM

**Participantes: Responsable de participación y educación ambiental, Responsable de campus y del voluntariado ambiental, Responsable de vehículos eléctricos UAM, Director de Infraestructuras**

**Fecha: 25 de mayo de 2018**

**Moderadora: Aspectos relacionados con, energía (lo que se está haciendo, lo que se ha hecho y lo que se piensa hacer).**

Director de Infraestructuras: Lo que se puede hacer desde nuestro ámbito que no es mucho.

Hay muchas cosas que en el pasado, presente y futuro no tiene mucho sentido, no tenemos mucho margen de maniobra.

La energía limpia y renovable y consumo de energía. En España la red eléctrica es general todo el mundo vierte su producción y todo el mundo pincha en esa producción, la única forma de hacerlo es como ahora mismo está haciendo el ayuntamiento de Madrid, y es contratar empresas que vierten su producción limpia y luego aseguran que esa producción que tu consumes, eso es imposible, porque se mete en una caja muy grande y ahí se mezcla todo: las centrales térmicas, nucleares, fotovoltaica y la que sea. Entonces lo único que podemos hacer, que lo intentaremos hacer en diciembre del 2019, que es cuando cumplen los dos contratos, de gas y electricidad, una de las cláusulas de ese pliego será que el que nos va a vender la energía asegure que lo mismo que nos va a vender ha producido de una manera limpia. Repito el esquema nacional, todo mundo vierte en esa red, en esa red se distribuye y todo el mundo pincha de esa red, lo único que podemos hacer es garantizar que el que vierte sea una producción limpia.

**Moderadora: ¿se mide en el momento que se vierte?**

Director de Infraestructuras: Sí, todo está medido.

**Moderadora: ¿Dentro de la universidad, iniciativas concretas?**

Director de Infraestructuras: La que te acabo de decir, que los pliegos, por supuesto que tiene que pasar por la ley de contratos. Entonces los pliegos, la cláusula que vamos a disponer, pero esto será para enero 2020, será que la empresa que se pueda presentar o una de las cláusulas de las empresas licitadoras sea que un porcentaje que se estima de producción sea de una energía renovable o una energía limpia.

**Moderadora: La energía a la que él se refiere:**

Ecocampus Manager: es la que consume la universidad.

**Annex 14. Transcription Depth Interview nr.1: Universidad Miguel Hernández,**

**Pres_Ass_Sus.**

**Transcripción - entrevistas en profundidad**

**Entrevistado:** Experto Académico, Universidad Miguel Hernández, Alicante.
Presidenta de grupo de evaluación para la sostenibilidad en la CRUE.
**Fecha:** 03 de mayo de 2017

**1. ¿Cuál es tu concepto de Universidad Sostenible?**

Bueno es una pregunta bastante complicada, en principio yo creo que universidad sostenible es aquella que, como cualquier actividad, trata de realizar todas sus gestiones, fundamentalmente la docencia, con respeto hacia el medioambiente. Esto es, tratar de disminuir los impactos que generan las actividades de la universidad en el entorno más próximo y en general. Para mi uno de los mayores impactos que genera la universidad, es la falta de educación ambiental a sus alumnos. No podemos permitir que los estudiantes que pasan por ella no adquieran conocimientos y pautas de conducta con respecto al medioambiente. Muchas veces la enseñanza está tan sumamente reglada y compartimentada, que no somos capaces de incluir los conceptos de sostenibilidad, y la sostenibilidad como forma de vida en los profesionales que salen de la universidad.

**2. ¿Se menciona la sostenibilidad ambiente en algún documento oficial de las universidades (CRUE)? Por ejemplo: la misión de las universidades, plan estratégico etc.**

CRUE Sostenibilidad está dividida en diversos grupos de trabajo que se enfocan en diferentes ámbitos, porque la sostenibilidad es muy amplia. Cada grupo realiza informes de recomendaciones que se entregan a las diversas universidades para que sean más sostenibles. Por ejemplo, nuestro grupo se encarga de evaluar la sostenibilidad, hemos creado una herramienta gracias a la cual, las universidades pueden medir su grado de sostenibilidad en todos los ámbitos (gestión, educación, investigación, etc.) La universidad va haciéndose el análisis interno y va viendo realmente qué nivel de sostenibilidad ha alcanzado.

Por ejemplo, hay otro grupo dentro de CRUE sostenibilidad que se ha encargado de la movilidad sostenible. Ese grupo ha generado numerosos documentos de cómo implementar y mejorar la movilidad en las universidades, que pasos hay que seguir para implementar una estrategia de movilidad sostenible en una universidad. El grupo de sostenibilización curricular ha generado documentos para establecer pautas y mejorar los currículums en cuanto a sostenibilidad, es decir incluir el concepto transversal de sostenibilidad, es decir sí que se han generado muchos documentos. Mi opinión es que CRUE sostenibilidad es una ONG, sí que es verdad que tiene muchas influencias en las universidades, muchas veces ese trabajo que hacemos no se implementa en la estrategia de la universidad, sí que es verdad que hay una gran voluntad por parte de las universidades, e implementar y seguir todas estas recomendaciones, pero a veces ese trabajo no se plasma de forma definitiva.

**Annex 15. Transcription Depth Interview nr.2: Universitat de Valéncia,**

**Exec_Sus_Comm.**

## Transcripción - Entrevistas en profundidad

**Entrevistado:** Experto Académico, Universitat de Valéncia, Valencia

Secretaria ejecutiva de la Comisión de Sostenibilidad de la CRUE

**Fecha:** 18 de mayo de 2017

**1. ¿Cuál es la visión y concepto desde la CRUE sobre una universidad sostenible?**

Tenemos ocho grupos de trabajo, ahora precisamente en la última asamblea se decidió incorporar un grupo más que sea sobre políticas de género, de igualdad porque también consideramos que es importante incluirlo dentro de sostenibilidad, entonces tenemos el área de evaluación de la sostenibilidad universitaria, el grupo de trabajo de evaluación que en estos momentos y en la última asamblea aprobamos una herramienta para la evaluación de la sostenibilidad en las universidades en donde esta herramienta dirigida a evaluar la calidad ambiental, la justicia social, la economía equitativa, la viabilidad, los recursos a largo plazo, etc. Tenemos una estructura, lo que pasa es que aún no tenemos resultados, lo que acordamos ahí, una vez dado el ok a la herramienta que hemos estamos mucho tiempo trabajando en ella, que las universidades nos la aplicamos cada una para que podamos obtener índices de sostenibilidad en nuestra universidades en los ámbitos de sostenibilidad ambiental, sensibilización de la comunidad universitaria, responsabilidad social, docencia, investigación, gestión ambiental, movilidad, residuos, compra verde energía, agua, urbanismo, biodiversidad. La idea es que las universidades nos contestemos a través de esta herramienta y podamos ver en que índices nos movemos, y a partir de ahí ver propuestas de mejora, creo esto ha sido un logro importante en la última reunión que hemos tenido, que nos permitirá tener indicadores más objetivos en las universidades.

**2. ¿Estos índices están ligados con alguna misión, plan estratégico u hoja de ruta?**

Esta evaluación sería de alguna forma la medida de diferentes indicadores que tienen que ver con los otros grupos de trabajo que la CRUE tiene, un ejemplo, un grupo de trabajo son mejoras ambientales en edificios universitarios, que estos edificios universitarios sean sostenibles también, que cuiden el , es uno de los datos que tendremos que contestar en esta herramienta, en esta medida se están haciendo inversiones para la sostenibilidad de los edificios, el tema de las energía por ejemplo renovables. En qué medida las universidades están apostando por la sostenibilidad en sus edificios, el consumo energético etc.

**Annex 16. Transcription Depth Interview nr.3: Universidad de Cantabria, Coor_Envir_Buil.**

**Transcripción – Entrevistas en profundidad**

**Entrevistado:** Experto Académico, Universidad de Cantabria, Santander.
Coordinador del grupo Mejoras Ambientales en Edificios Universitarios en la CRUE.
**Fecha:** 02 de mayo de 2017

**1. ¿Cuál es tu concepto de Universidad Sostenible?**
La palabra sostenibilidad ahora mismo se está utilizando con un criterio bastante amplio. Mi percepción es que la sostenibilidad tiene varios significados, para algunos compañeros la sostenibilidad tiene que ver con cuestiones de movilidad, para nosotros tiene que ver con cuestiones de eficiencia energética, para otros tiene que ver con la parte curricular (formación básica y general de los estudiantes). Para otros tiene que ver con la participación y el voluntariado, como una forma de compromiso social.

**2. ¿Se menciona la sostenibilidad ambiente en algún documento oficial de las universidades (CRUE)? por ejemplo: la misión de las universidades, plan estratégico etc. ¿Cómo miden ese cumplimiento?**
Por una parte, nuestra hoja de ruta dentro de la sectorial sigue los objetivos de desarrollo sostenible de naciones unidas, y dentro de esos objetivos, los grupos se van organizando. La participación de las sectoriales dentro de las universidades es un ejercicio voluntario, de manera que podrás encontrar desde un punto de vista externo, que la participación de las universidades está ligado a afinidades personales. Por ejemplo, a mí me interesa la eficiencia energética y me metí a la sectorial de mejoras ambientales en los edificios universitarios. Si dejo de ser vicerrector y abandono el grupo de trabajo, eso no quiere decir que el siguiente vicerrector vaya a estar también presidiendo ese grupo de trabajo. Las sectoriales son grupos de trabajo vivos y eso obliga a que las personas que participan estén alineadas en las temáticas de trabajo.
En la universidad hay una memoria de responsabilidad social corporativa, que, aunque incluye temas relacionados con la energía, ha estado más relacionado con cuestiones de igualdad de género. Ahora estamos en un proceso de reelaborar esta memoria para incluir aspectos como movilidad y energía.

**3. ¿Cuál es su valoración de la voluntad de las universidades de hacer frente a su responsabilidad en cuanto a las acciones de los grupos de trabajo?**
Como te decía existe una voluntad por parte de las universidades, hemos redactado la memoria que te comentaba anteriormente y cubre muchos ámbitos sostenibles. Yo creo que sí que existe un compromiso claro, pero tenemos que modular nuestro compromiso atendiendo a los recursos con los que podemos trabajar. Justo al final del anterior mandato se puso en marcha una guía de compra sostenible que introducía criterios dentro de la compra en la administración pública, criterios que tuviesen que ver con la igualdad de oportunidad, etc.

**Annex 17. Transcription Depth Interview nr.4: Universidad Autónoma de Barcelona, Coor_Mob.**

**Transcripción – Entrevistas en profundidad**

**Entrevistado:** Experto Académico, Universidad Autónoma de Barcelona
Coordinador del grupo de Movilidad en la CRUE
**Fecha:** 19 de abril de 2017

**1. ¿Cuál es tu concepto de Universidad Sostenible?**
Es aquella universidad, cuya actividad se mantiene dentro de unos parámetros aceptables, en cuanto a recursos consumidos y en cuanto a residuos generados. Desde mi ámbito, entiendo que la movilidad generada por las universidades es uno de los factores que más comprometen la universidad. Cuando hablamos de sostenibilidad, es un concepto más amplio que incluye otros aspectos como eficiencia económica y sostenibilidad social.

**2. ¿Se menciona la sostenibilidad ambiente en algún documento oficial de las universidades (CRUE)? por ejemplo: la misión de las universidades, plan estratégico etc. ¿Cómo miden ese cumplimiento?**
Si, el grupo de universidad y movilidad trabaja en una ficha de creación de grupo que ha ido evolucionando dese 2010 y trata temas sociales, ambientales y económicos. El primer trabajo de este grupo fue una declaración aprobada por el plenario de CRUE e indicó el posicionamiento de CRUE con respecto a las universidades. Este documento oficial de CRUE establece que modelo de movilidad deben conseguir las universidades españolas y como deberían alcanzarlo.
Existe un seguimiento para las universidades que han adoptado nuestras propuestas de forma voluntaria. Con respecto al amito de movilidad, el grupo ha trabajado en una web donde encontraras nuestra declaración y un apartado de buenas prácticas, verás que están organizadas por diferentes líneas estratégicas. Una de las líneas estratégicas contiene una ficha a rellenar por las universidades en la que recoge su implicación política en el ámbito de la universidad. Esa es una manera de ir haciendo un seguimiento de las universidades que están realizando planes de movilidad.

**3. ¿Cuál es su valoración de la voluntad de las universidades de hacer frente a su responsabilidad en cuanto a las acciones de los grupos de trabajo?**
El primer factor está entre la voluntad de las universidades, la cual es muy elevada, y lo que realmente se puede hacer, que es escaso. Hasta ahora las universidades se han preocupado el desde un punto de vista integral, desde las oficinas de. Ahora el interés está creciendo mucho, por intereses económicos y sociales.
El problema viene cuando quieren implantar medidas, pero no tienen recursos o falta de apoyo.

**Annex 18. Transcription Depth Interview nr.5: Student Representative, DPrest_CREUP.**

**Transcripción – Entrevista en profundidad**

**Entrevistado:** Representante de estudiantes – CREUP, Universidad de Córdoba.
**Fecha:** 25 de abril de 2017

**1. ¿Cuál es tu concepto de Universidad Sostenible?**
Para mí la sostenibilidad dentro de la universidad tiene que ser, una gestión de nuestros recursos, optimizándolos y consiguiendo así evitar que los costes sean mínimos y lograr una eficiencia máxima.

**2. Valore la percepción / concienciación de la comunidad universitaria sobre las inversiones de acciones sostenibles realizadas por su universidad.**
Desgraciadamente creo que, a pesar de estar bombardeados en temas de sostenibilidad, los estudiantes no son conscientes y no somos capaces de trasladarlo a la universidad. La gente no entiende que se tengan que llevar a cabo ese tipo de medidas en la universidad, en aspectos generales no siento que mis compañeros entiendan que la universidad debe ser un sitio sostenible.

**3. ¿Se menciona la sostenibilidad ambiente en algún documento oficial de las universidades (CRUE), por ejemplo: la misión de las universidades, plan estratégico etc. ¿Cómo miden ese cumplimiento?**

En la universidad de córdoba, existe el servicio de protección ambiental, que es un servicio, que pone a disposición la universidad de córdoba con un plan estratégico. Es un servicio en el que se llevan a cabo una serie de medidas ambientales, desde proporcionar un servicio de bicicletas gratis o desde la gestión de servicios, como el reciclaje de residuos como ordenadores y calculadoras. Personalmente desconozco las medidas sostenibles del resto de universidades.

**4. ¿La universidad dispone de un programa, línea estratégica o plan de ahorro energético?**
Tanto en la universidad de córdoba como en la politécnica he participado en actividades sostenibles. Se han realizado una serie de conferencias, en córdoba se llamaba *smart cities*, relacionado con desarrollar sociedades ambientes y entornos sostenibles. Por otro lado, en la UPM estaban, más relacionadas con objetivos de desarrollo sostenible de naciones unidas. Realmente no son políticas que lleva la universidad como tal, pero sí que por cascada llegan de alguna forma. Son conferencias en las que tiene que ser el propio individuo participe.

## Annex 19. Classification of Main Topics in General Themes per Year

| Rank | Topic | Environmental Sustainability | Economic-Social Sustainability | Mobility initiatives | Government involvement | University campus operation | University mission | General Sustainability | CSR | Not related to sustainability / Not relevant for the report |
|---|---|---|---|---|---|---|---|---|---|---|
| **2014** | | | | | | | | | | |
| **1** | Social development management | | 0,06997131 | | | | | | | |
| **2** | International innovative development project | | | | | | 0,0662998 | 0,06629975 | | |
| **3** | Public politics and laws | | | | 0,06064772 | | | | | |
| **4** | Cultural and environment events at HEI | | | | | | 0,0579889 | | | |
| **5** | Water and electric resources management | 0,05436213 | | | | | | | | |
| **6** | Economic and social factors | | 0,05290614 | | | | | | | |
| **7** | Public funding for education and research | | | | 0,05234015 | | 0,0523402 | | | |
| **8** | Citizen and government participation | | | | 0,05118712 | | | | | |
| **9** | Job opportunities | | | | | | | | | 0,05021941 |
| **10** | CSR | | | | | | | | 0,049 | |